

**Baltimore Baseline Analysis
and Capacity Assessment**



**Average Daily
Infiltration
(gpd/idm)**

Figure 3-2-2

Jones Falls

High Level

Low Level

Dundalk

Legend

◆ Building - Inte, Moderate

● Cleanout, Moderate

● Cleanout, Trace

⊠ Downspout, Moderate

⊠ Foundation Drai, Trace

⊗ Lateral, Major

⊗ Lateral, Moderate

● Lateral, Trace

● Main Sewer, Major

⊗ Main Sewer, Moderate

● Main Sewer, Trace

⊗ Manhole Frame, Major

⊗ Manhole Frame, Moderate

● Manhole Frame, Trace

⊗ Other, Major

⊗ Other, Moderate

⊠ Storm Drain, Major

⊠ Storm Drain, Moderate

⊠ Storm Drain, Trace

⊗ Storm Manhole, Moderate

⊗ Telephone Pole, Moderate

⊗ Telephone Pole, Trace

⊗ Water Line, Moderate

● Water Line, Trace

— Outfall Sewer

— Sewer

R-Value Coefficients

< 4

4 - 6

6 - 8

8 - 10

10 and greater

Unknown

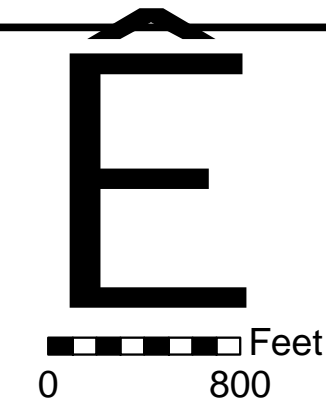
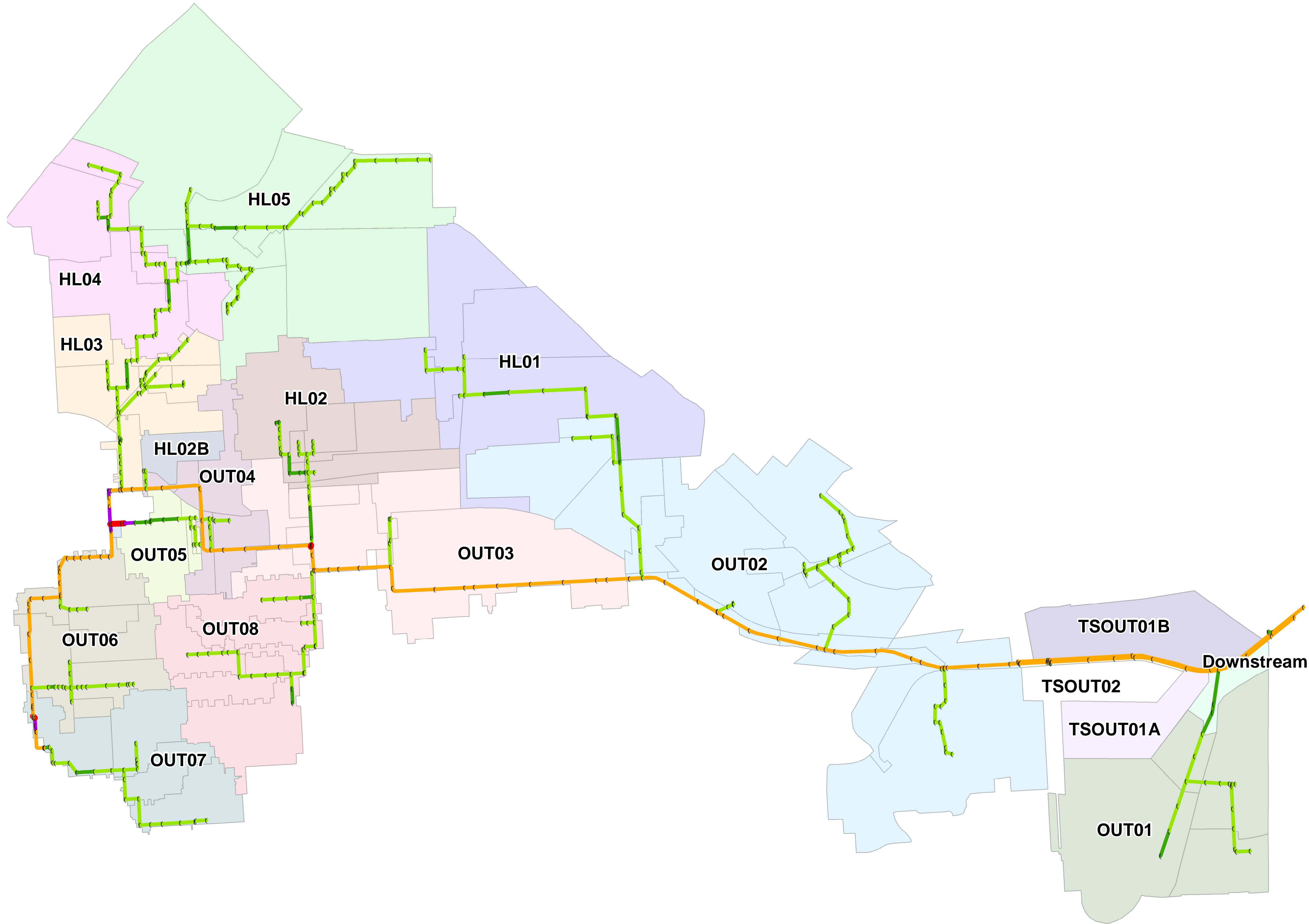
Herring Run

Baltimore Baseline Analysis
and Capacity Assessment



R-Value Capture
Coefficients

Figure 3-2-3



Legend

Manhole Flooding State

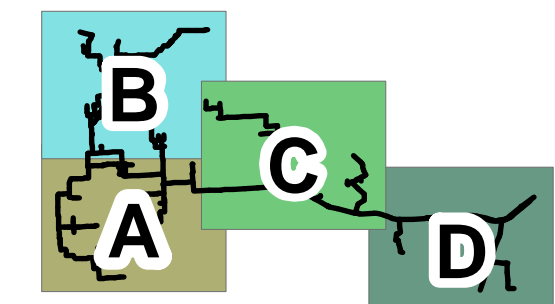
- () Flooding
- () No Flooding

Conduit Surcharge State

Pipe Percent Full

- 0-24%
- 25-49%
- 50-74%
- 75-99%
- Surcharged

- Notes:
- 1) There are no engineered SSO facilities within the Outfall Sewershed.
 - 2) Conduit Surcharge State is the model predicted maximum surcharge state for the simulated event.



BROWN AND
CALDWELL

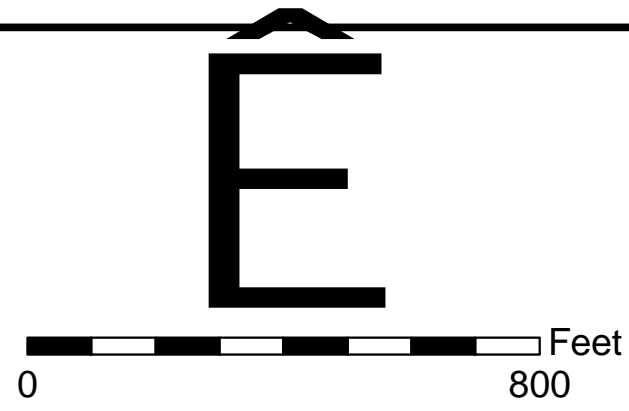
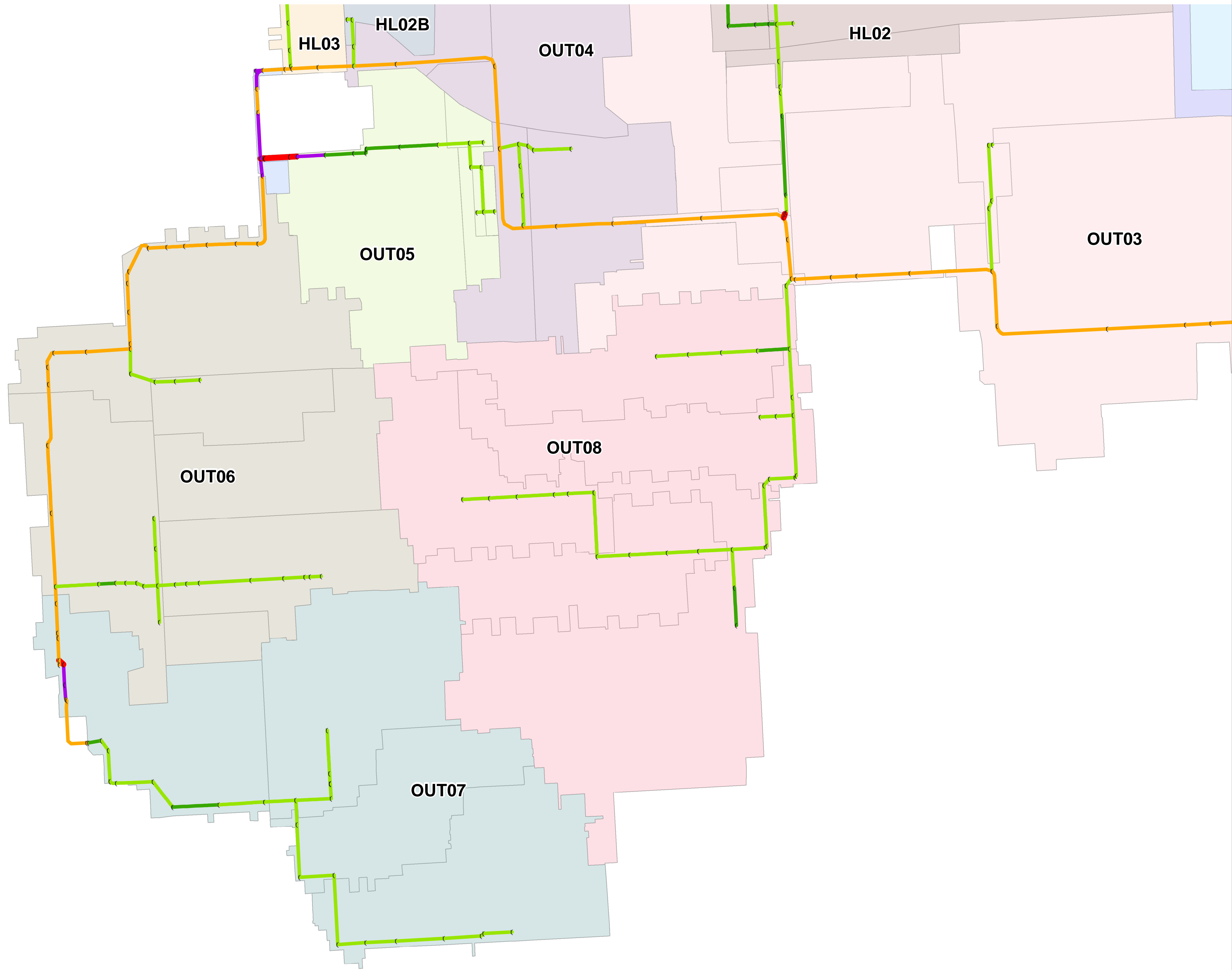
May 2009

Outfall
Baseline Conditions
Dry Weather
Capacity Assessment
Active Boundary Conditions

Project 1039 Outfall Collection System Evaluation & Sewershed Plan



Figure 4-4-1



Legend

Manhole Flooding State

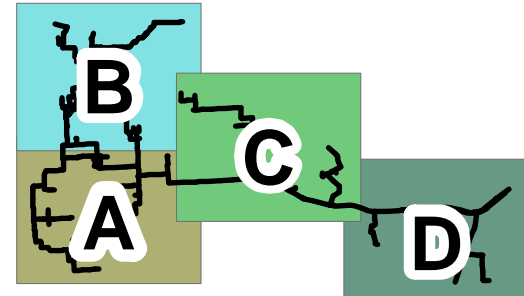
- (Red line) Flooding
- (Black line) No Flooding

Conduit Surcharge State

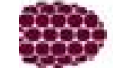
Pipe Percent Full

- Light green line 0-24%
- Dark green line 25-49%
- Orange line 50-74%
- Purple line 75-99%
- Red line Surcharged

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.
2) Conduit Surcharge State is the model predicted maximum surcharge state for the simulated event.



Dewberry



BROWN AND CALDWELL

May 2009

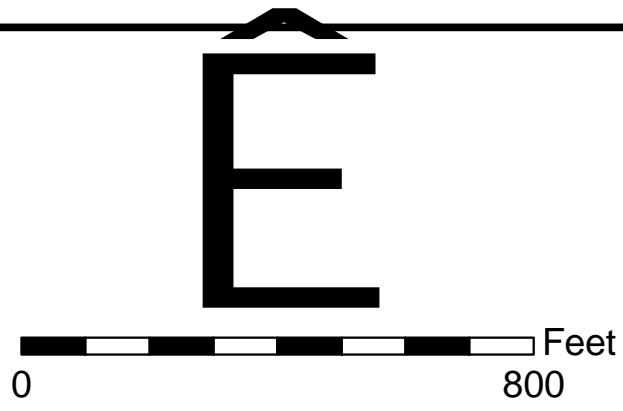
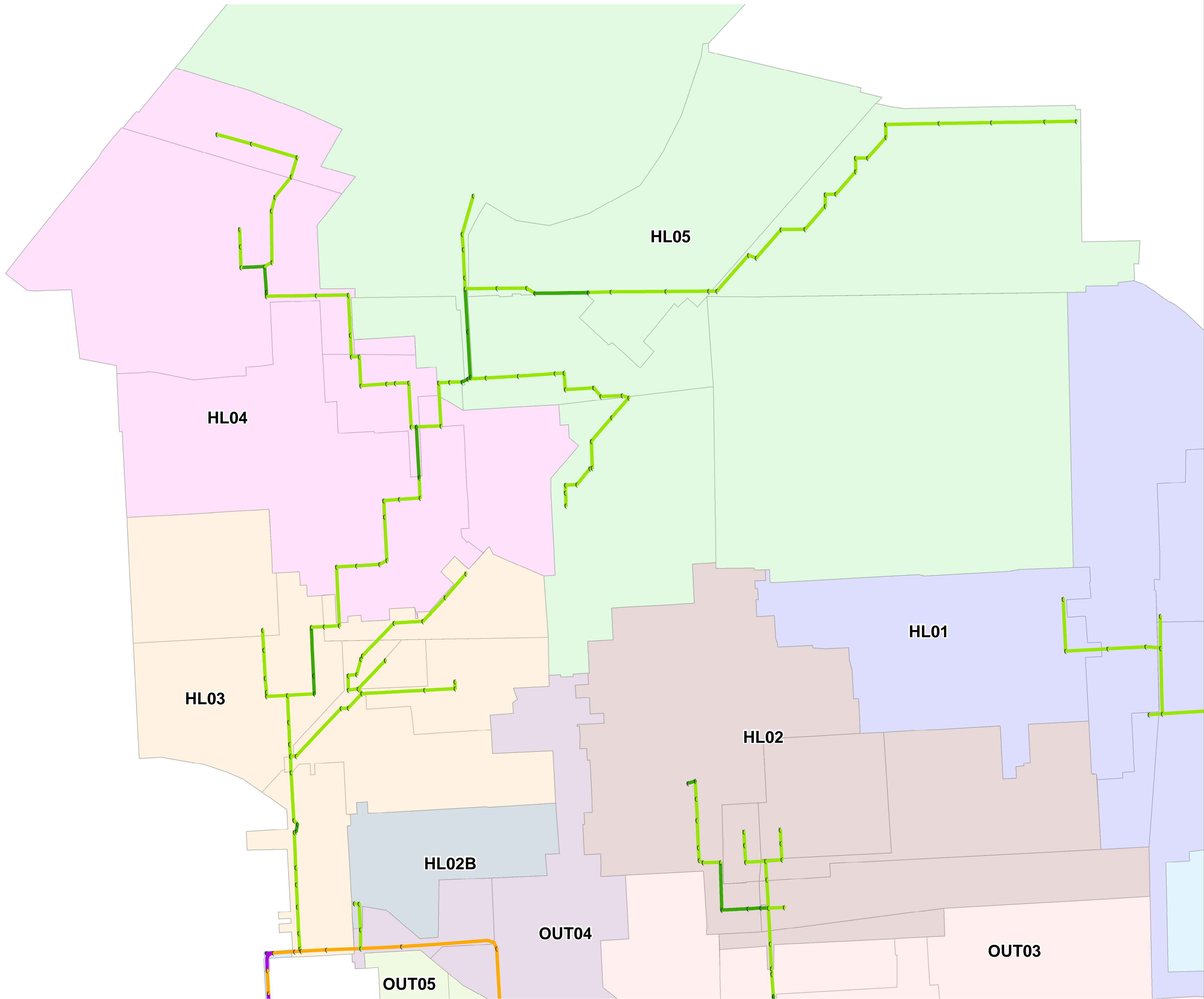
Outfall
Baseline Conditions
Dry Weather
Capacity Assessment

Active Boundary Conditions

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan



Figure 4-4-1-A



Legend

Manhole Flooding State

- (Flooding
- No Flooding

Conduit Surcharge State

Pipe Percent Full

- 0-24%
- 25-49%
- 50-74%
- 75-99%
- Surcharged

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.
2) Conduit Surcharge State is the model predicted maximum surcharge state for the simulated event.

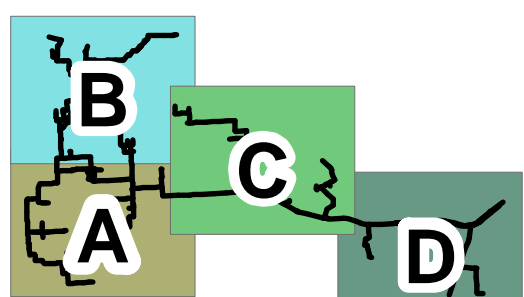
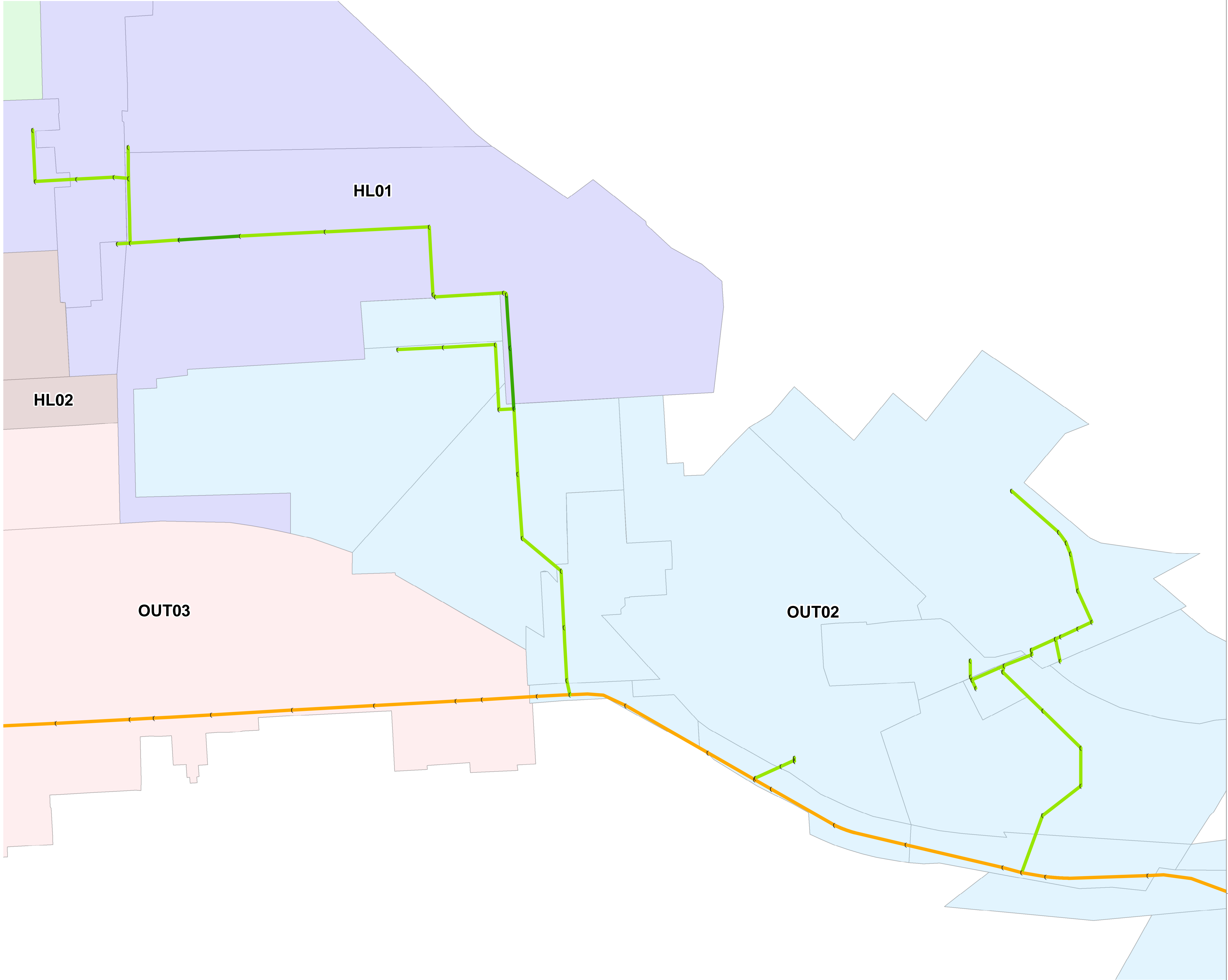


Figure 4-4-1-B



Legend

Manhole Flooding State

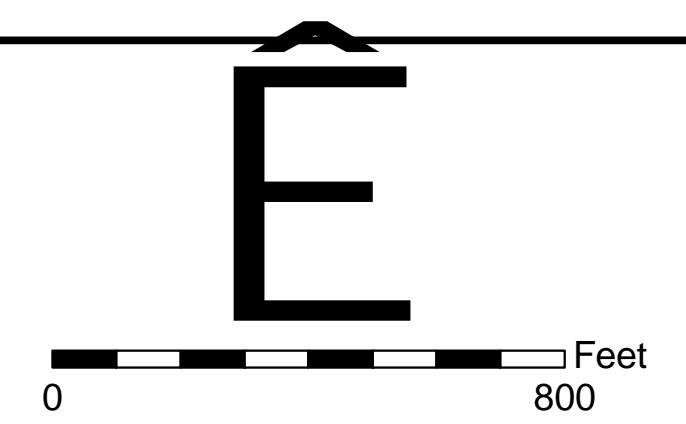
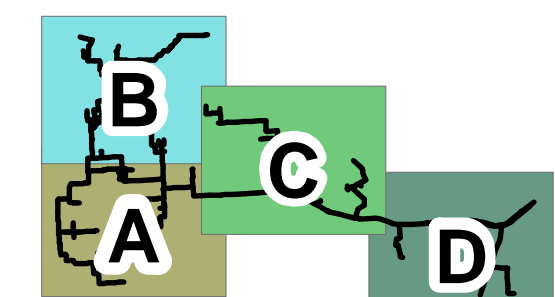
- (Flooding
- (No Flooding

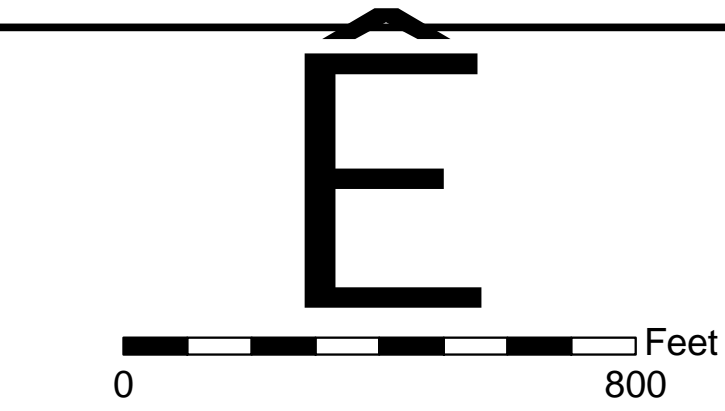
Conduit Surcharge State

Pipe Percent Full

- 0-24%
- 25-49%
- 50-74%
- 75-99%
- Surcharged

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.
2) Conduit Surcharge State is the model predicted maximum surcharge state for the simulated event.





Legend

Manhole Flooding State

- (Red dot) Flooding
- (Black dot) No Flooding

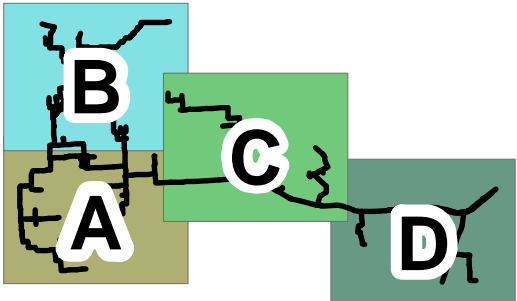
Conduit Surcharge State

Pipe Percent Full

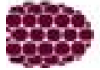
- Light green line 0-24%
- Dark green line 25-49%
- Orange line 50-74%
- Purple line 75-99%
- Red line Surcharged

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.

2) Conduit Surcharge State is the model predicted maximum surcharge state for the simulated event.



Dewberry



BROWN AND
CALDWELL

May 2009

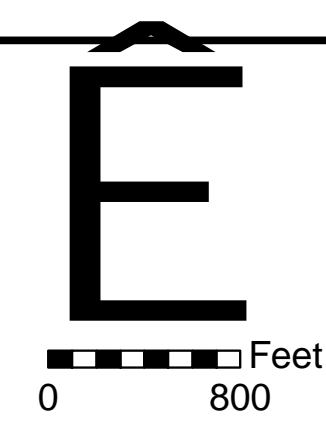
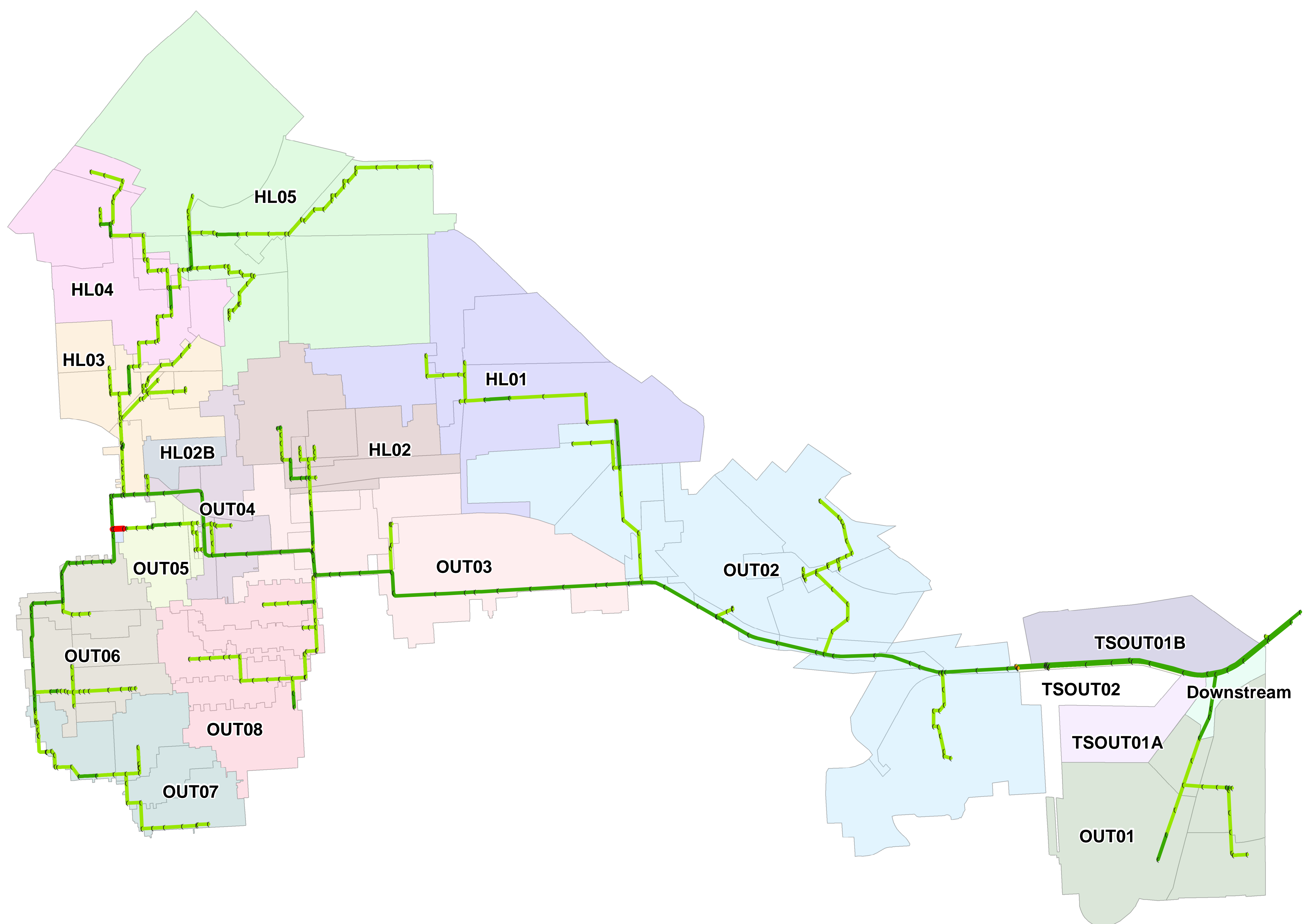
Outfall
Baseline Conditions
Dry Weather
Capacity Assessment

Active Boundary Conditions

**Project 1039
Outfall Collection System
Evaluation & Sewershed Plan**



Figure 4-4-1-D



Legend

Manhole Flooding State

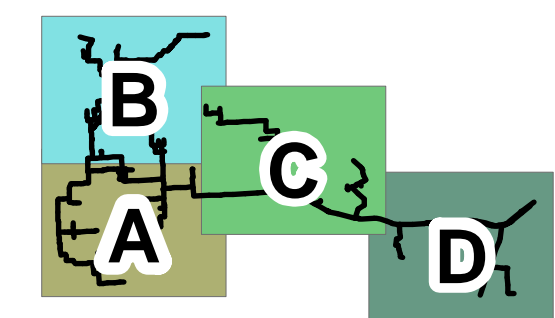
- (Red outline) Flooding
- (Black outline) No Flooding

Conduit Surcharge State

Pipe Percent Full

- (Light green line) 0-24%
- (Dark green line) 25-49%
- (Orange line) 50-74%
- (Purple line) 75-99%
- (Red line) Surcharged

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.
2) Conduit Surcharge State is the model predicted maximum surcharge state for the simulated event.



**Dewberry**

**BROWN AND CALDWELL**

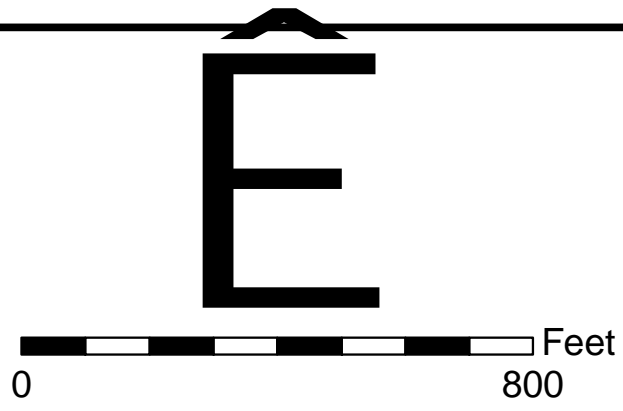
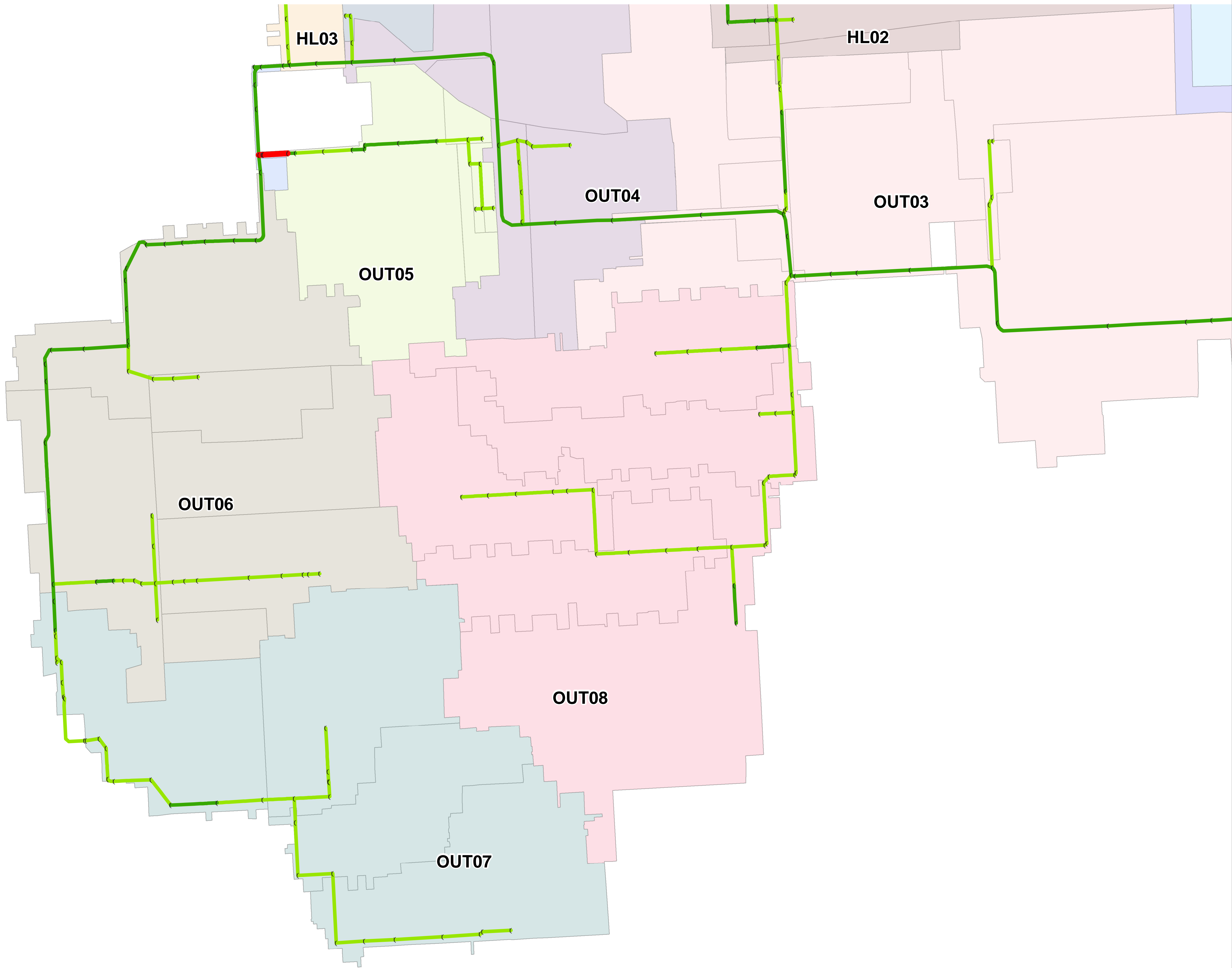
May 2009

Outfall
Baseline Conditions
Dry Weather
Capacity Assessment
Inactive Boundary Conditions

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan



Figure 4-4-2



Legend

Manhole Flooding State

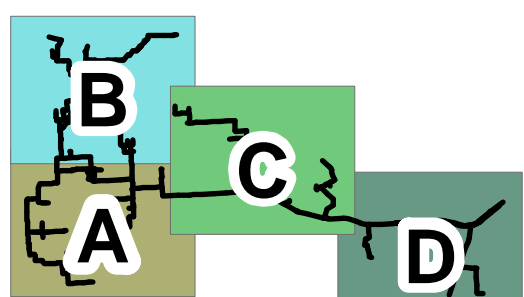
- () Flooding
- () No Flooding

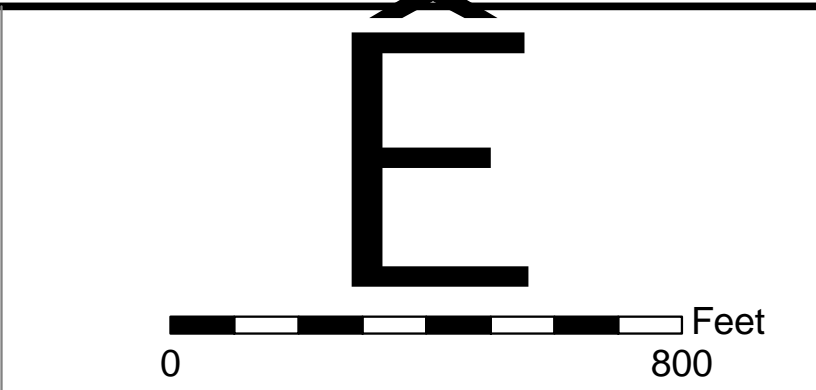
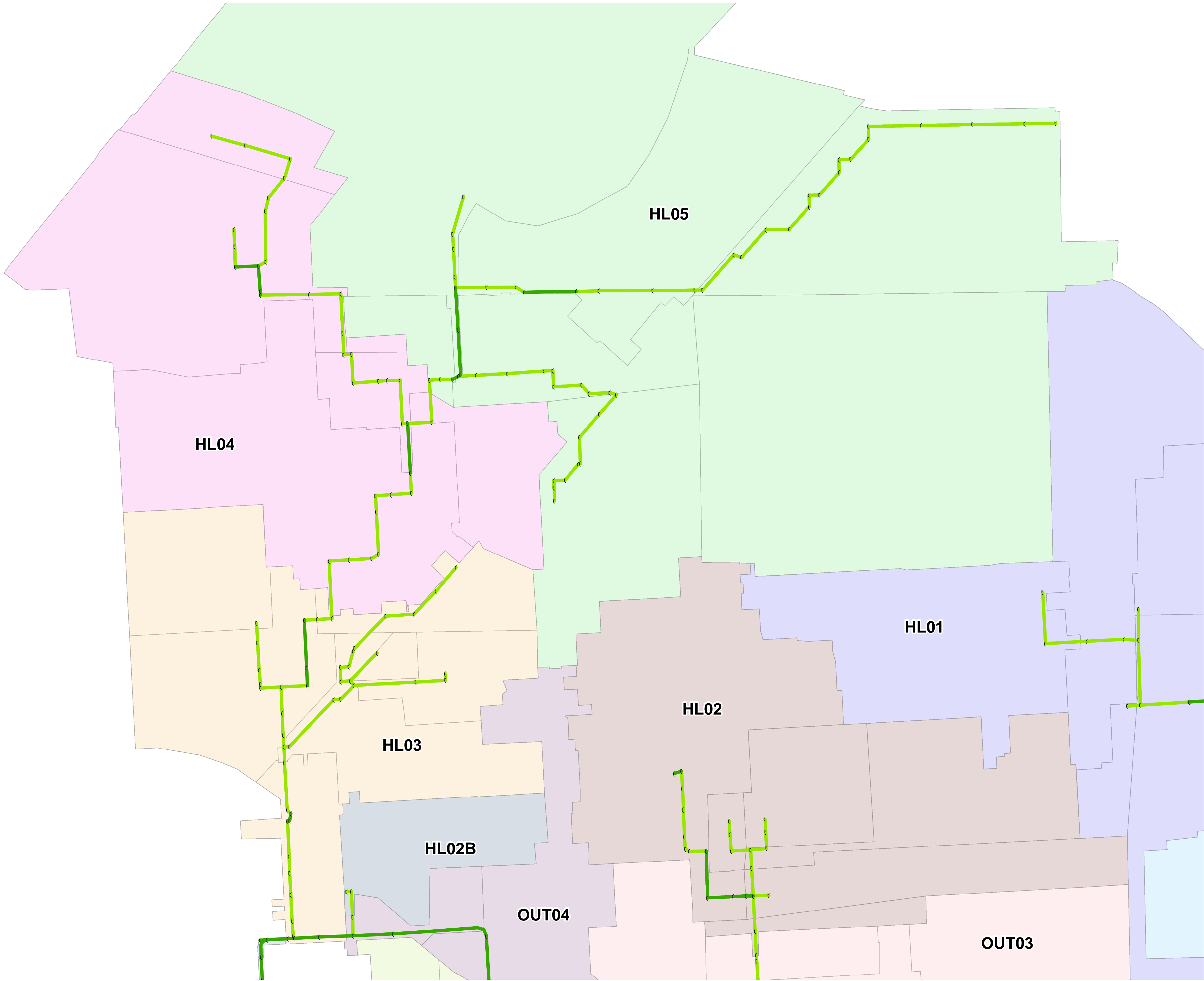
Conduit Surcharge State

Pipe Percent Full

- 0-24%
- 25-49%
- 50-74%
- 75-99%
- Surcharged

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.
2) Conduit Surcharge State is the model predicted maximum surcharge state for the simulated event.





Legend

Manhole Flooding State

- (Red symbol) Flooding
- (Black symbol) No Flooding

Conduit Surge State

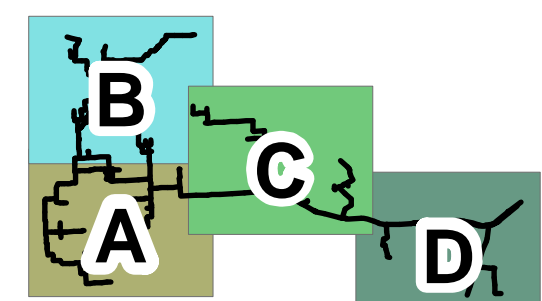
Pipe Percent Full




- 0-24%
- 25-49%
- 50-74%
- 75-99%
- Surcharged

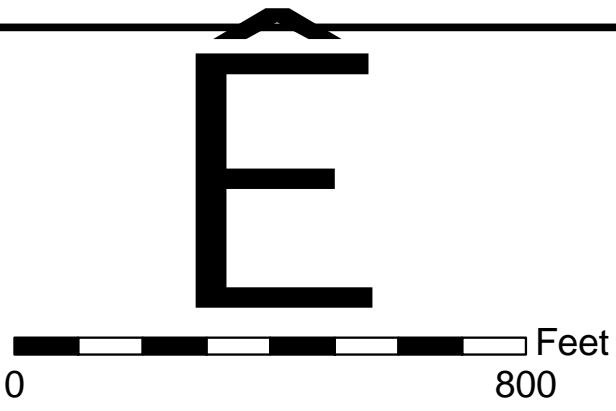
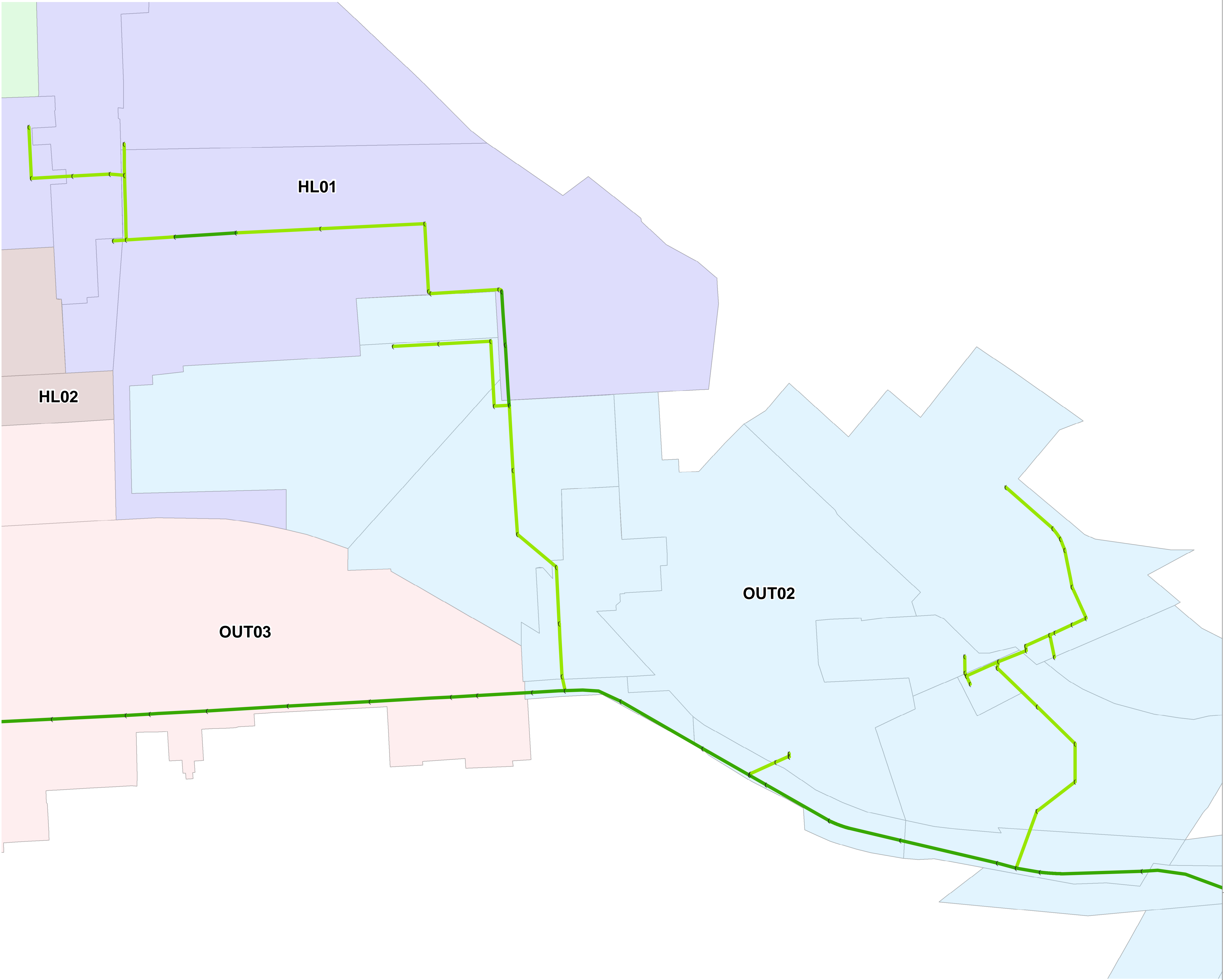
Notes:

1) There are no engineered SSO facilities within the Outfall Sewershed.

2) Conduit Surge State is the model predicted maximum surge state for the simulated event.





  <p>May 2009</p>	
<p>Outfall</p> <p>Baseline Conditions</p> <p>Dry Weather</p> <p>Capacity Assessment</p>	<p>Project 1039</p> <p>Outfall Collection System</p> <p>Evaluation & Sewershed Plan</p> 
<p>Figure 4-4-2-B</p>	








Legend

Manhole Flooding State

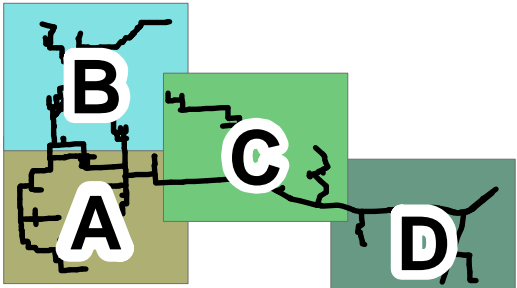
-  Flooding
-  No Flooding

Conduit Surcharge State

Pipe Percent Full

-  0-24%
-  25-49%
-  50-74%
-  75-99%
-  Surcharged

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.
2) Conduit Surcharge State is the model predicted maximum surcharge state for the simulated event.



Dewberry



BROWN AND
CALDWELL

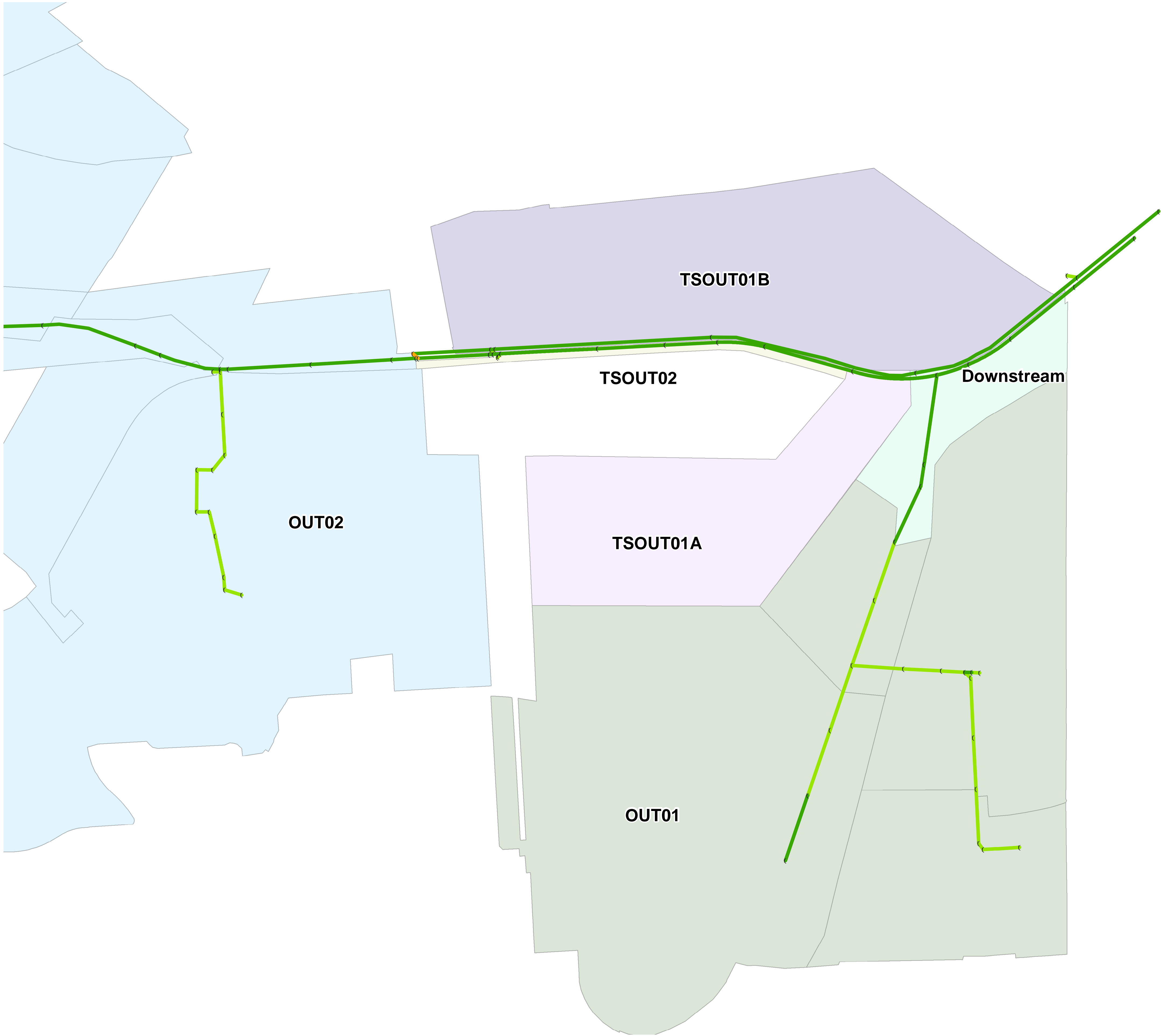
May 2009

Outfall
Baseline Conditions
Dry Weather
Capacity Assessment
Inactive Boundary Conditions

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan



Figure 4-4-2-C



Legend

Manhole Flooding State

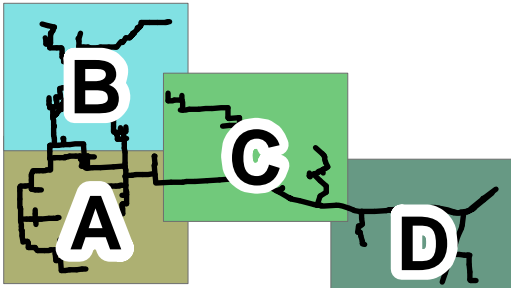
- () Flooding
- () No Flooding

Conduit Surge State

Pipe Percent Full

- 0-24%
- 25-49%
- 50-74%
- 75-99%
- Surcharged

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.
2) Conduit Surge State is the model predicted maximum surge state for the simulated event.



Dewberry



BROWN AND CALDWELL

May 2009

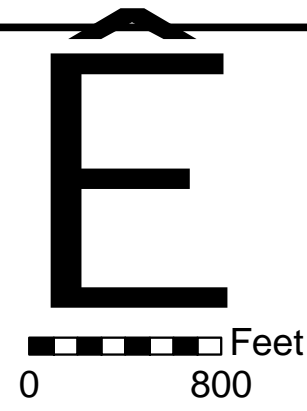
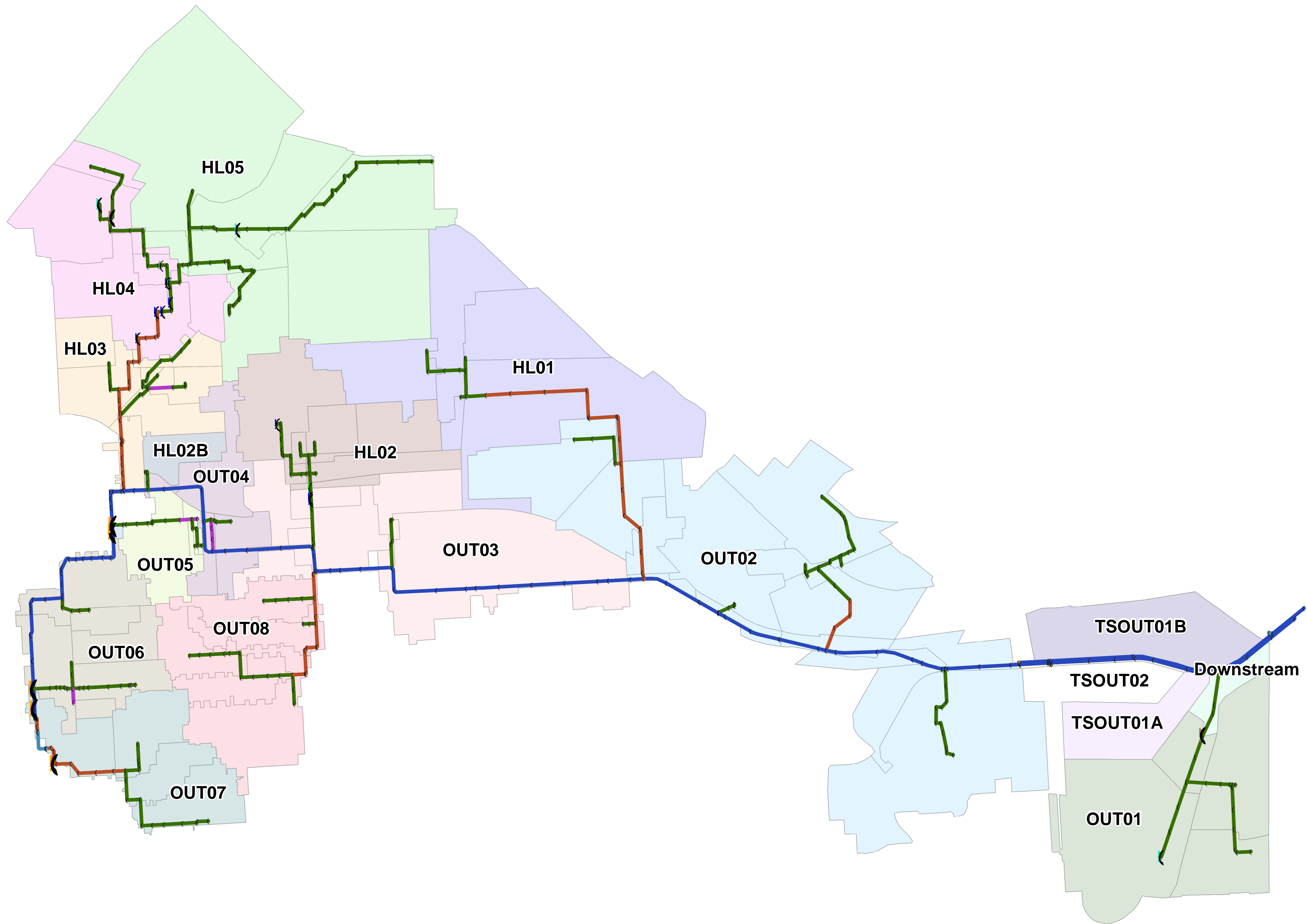
Outfall
Baseline Conditions
Dry Weather
Capacity Assessment

Inactive Boundary Conditions

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan



Figure 4-4-2-D



Legend

- Manhole Flooding RPA**
- 3-Month 1-Hour Storm
 - 1-Year 24-Hour Storm
 - 2-Year 24-Hour Storm
 - 5-Year 24-Hour Storm
 - 10-Year 24-Hour Storm
 - 15-Year 24-Hour Storm
 - 20-Year 24-Hour Storm
 - No Flooding <= 20-Yr Storm
- Sewer Conduit Height**
- < 10 Inches
 - 10-19 Inches
 - 20-29 Inches
 - 30-39 Inches
 - 40-72 Inches
 - > 72 Inches

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.

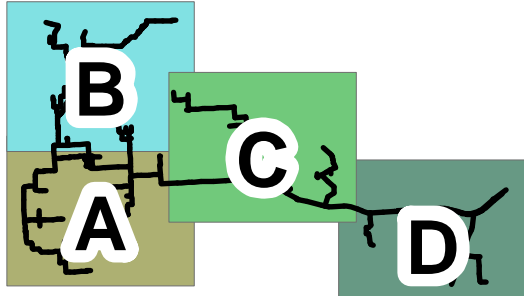
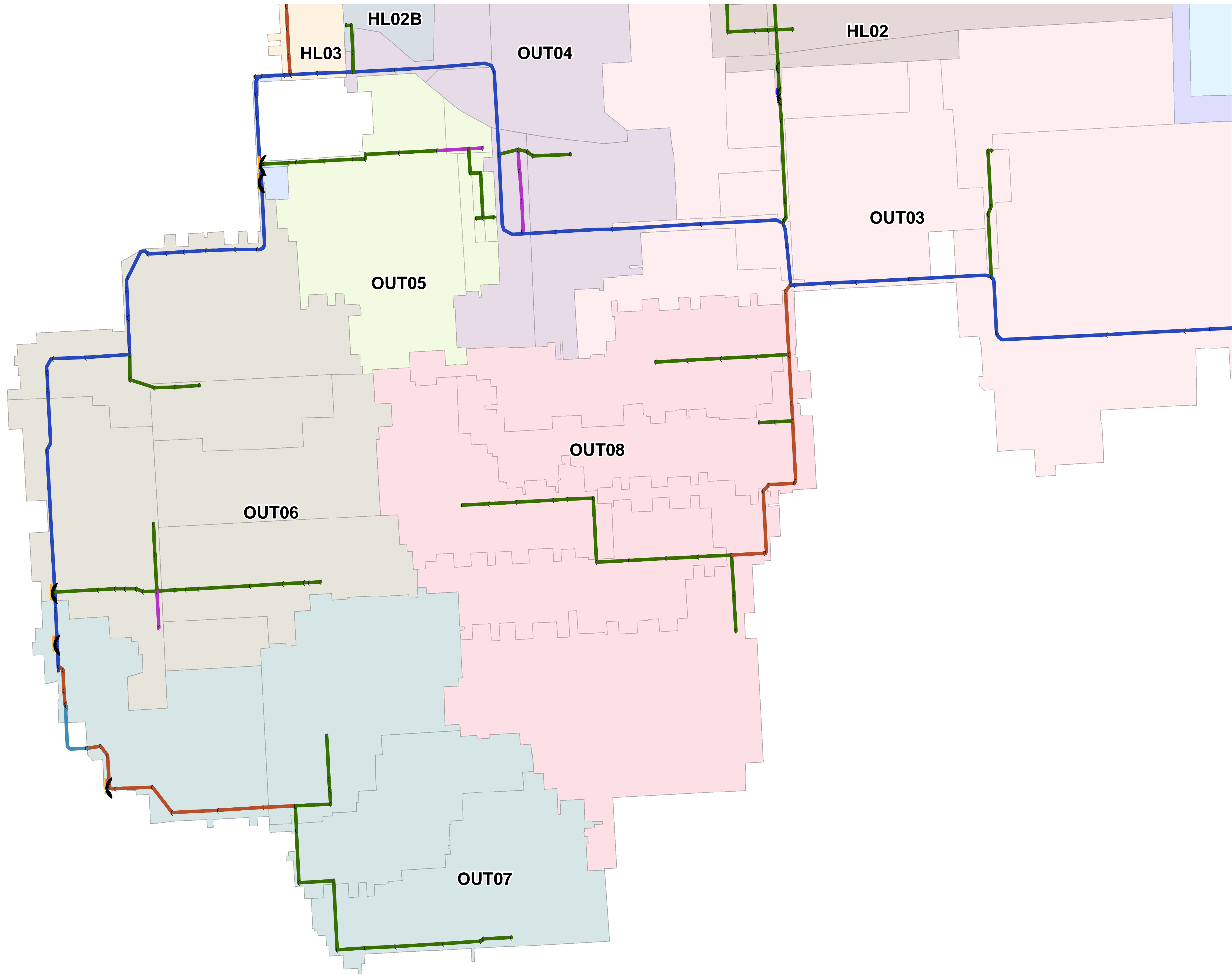


Figure 4-5-2

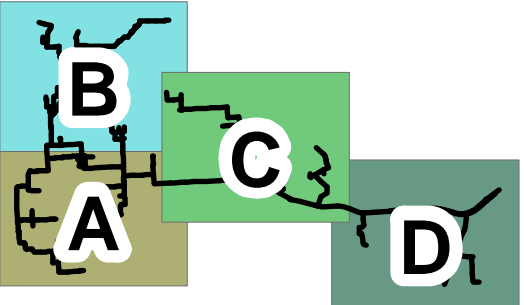


Legend

- Manhole Flooding RPA**
- 3-Month 1-Hour Storm
 - 1-Year 24-Hour Storm
 - 2-Year 24-Hour Storm
 - 5-Year 24-Hour Storm
 - 10-Year 24-Hour Storm
 - 15-Year 24-Hour Storm
 - 20-Year 24-Hour Storm
 - No Flooding <= 20-Yr Storm

- Sewer Conduit Height**
- < 10 Inches
 - 10-19 Inches
 - 20-29 Inches
 - 30-39 Inches
 - 40-72 Inches
 - > 72 Inches

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.



Dewberry



BROWN AND CALDWELL

May 2009

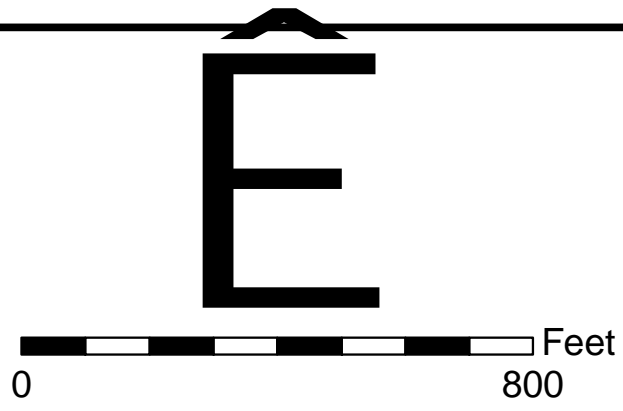
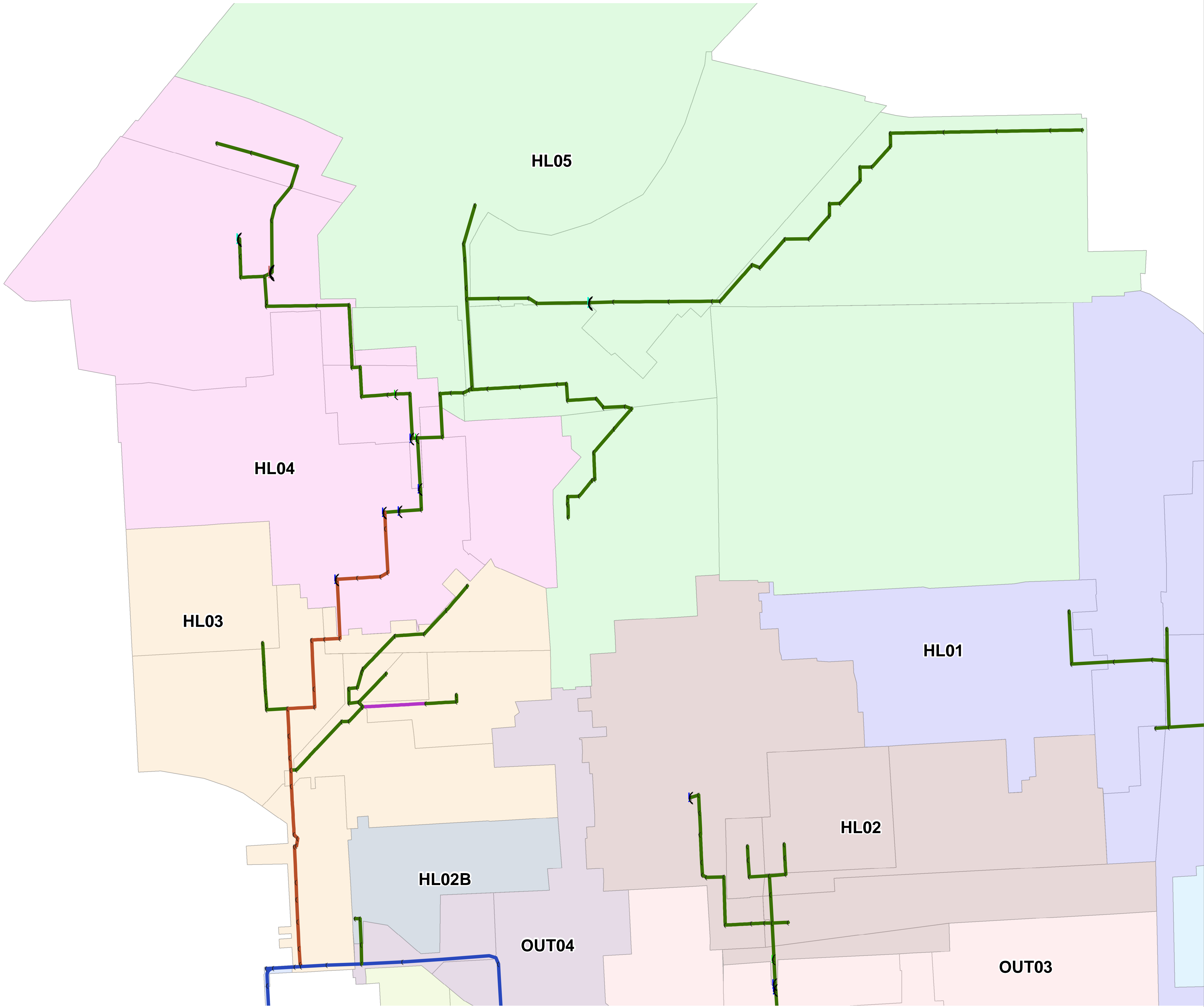
Outfall
Baseline Conditions
Flooding Return
Period Analysis

Active Boundary Conditions

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan



Figure 4-5-2-A



Legend

- Manhole Flooding RPA**
- 3-Month 1-Hour Storm
 - 1-Year 24-Hour Storm
 - 2-Year 24-Hour Storm
 - 5-Year 24-Hour Storm
 - 10-Year 24-Hour Storm
 - 15-Year 24-Hour Storm
 - 20-Year 24-Hour Storm
 - No Flooding <= 20-Yr Storm

- Sewer Conduit Height**
- < 10 Inches
 - 10-19 Inches
 - 20-29 Inches
 - 30-39 Inches
 - 40-72 Inches
 - > 72 Inches

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.

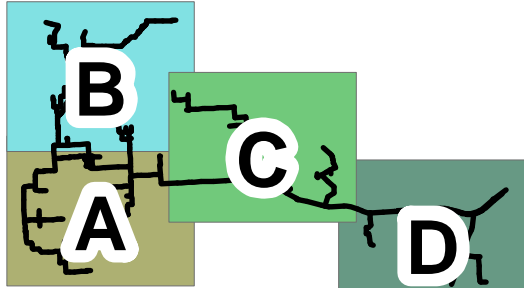
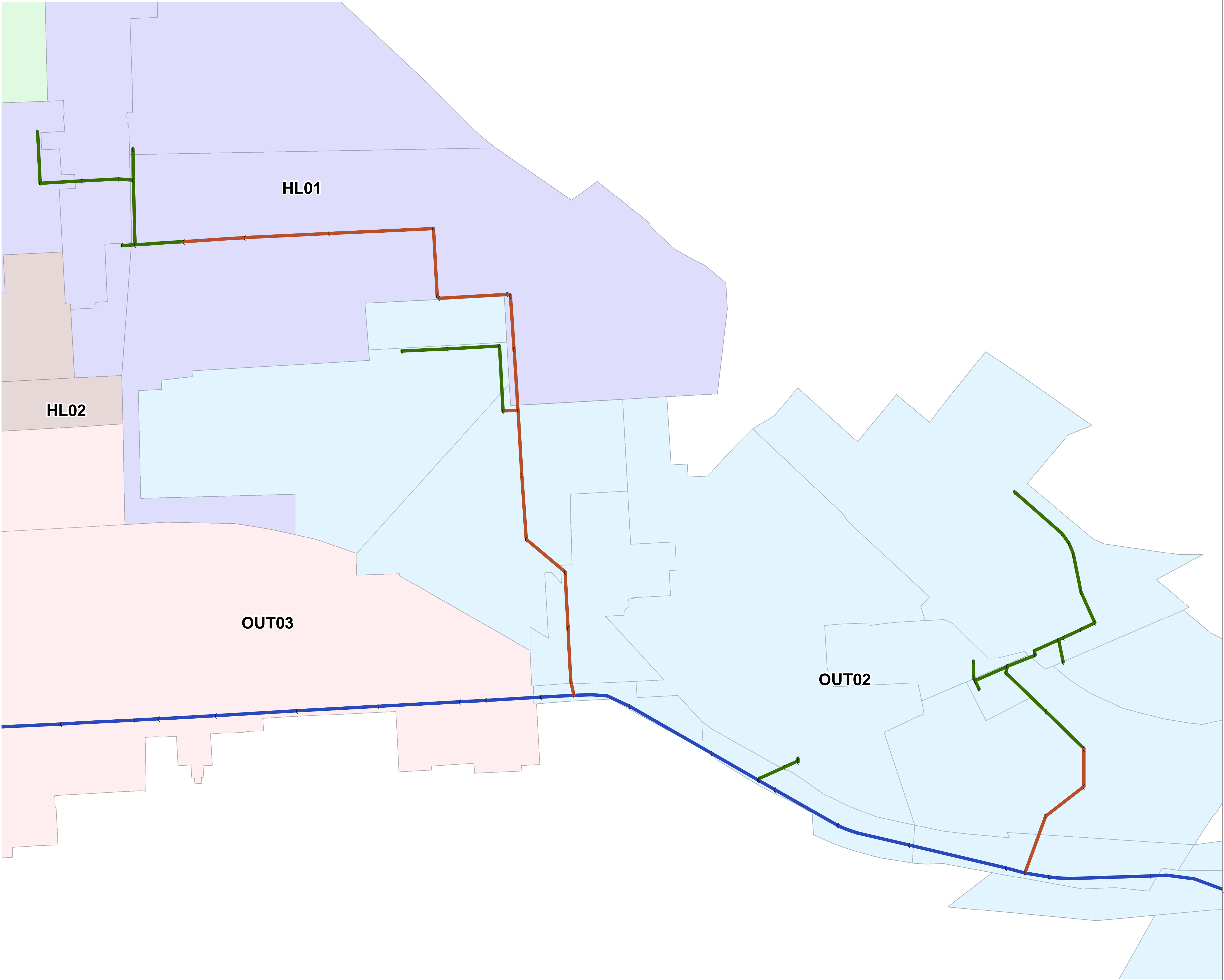


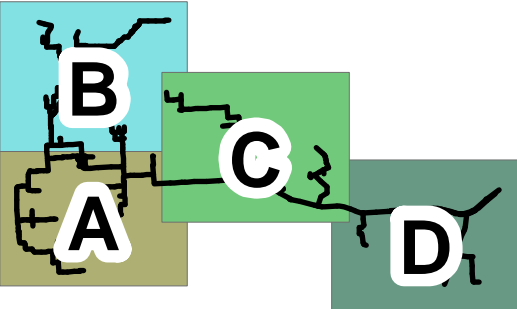
Figure 4-5-2-B



Legend

- Manhole Flooding RPA**
- 3-Month 1-Hour Storm
 - 1-Year 24-Hour Storm
 - 2-Year 24-Hour Storm
 - 5-Year 24-Hour Storm
 - 10-Year 24-Hour Storm
 - 15-Year 24-Hour Storm
 - 20-Year 24-Hour Storm
 - No Flooding <= 20-Yr Storm
- Sewer Conduit Height**
- < 10 Inches
 - 10-19 Inches
 - 20-29 Inches
 - 30-39 Inches
 - 40-72 Inches
 - > 72 Inches

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.



0 800 Feet

**Project 1039
Outfall Collection System
Evaluation & Sewershed Plan**

**Outfall
Baseline Conditions
Flooding Return
Period Analysis
Active Boundary Conditions**

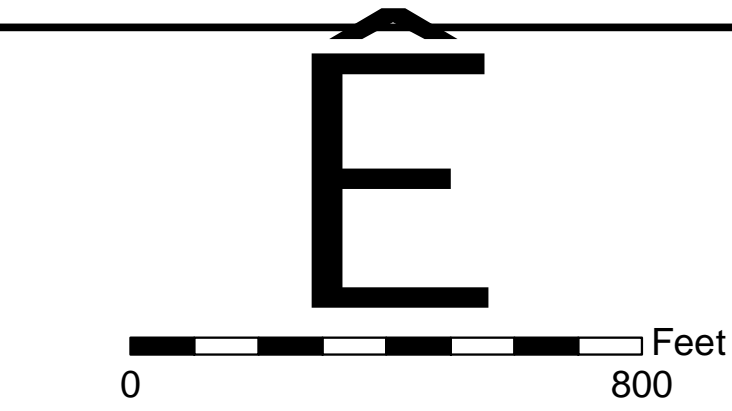
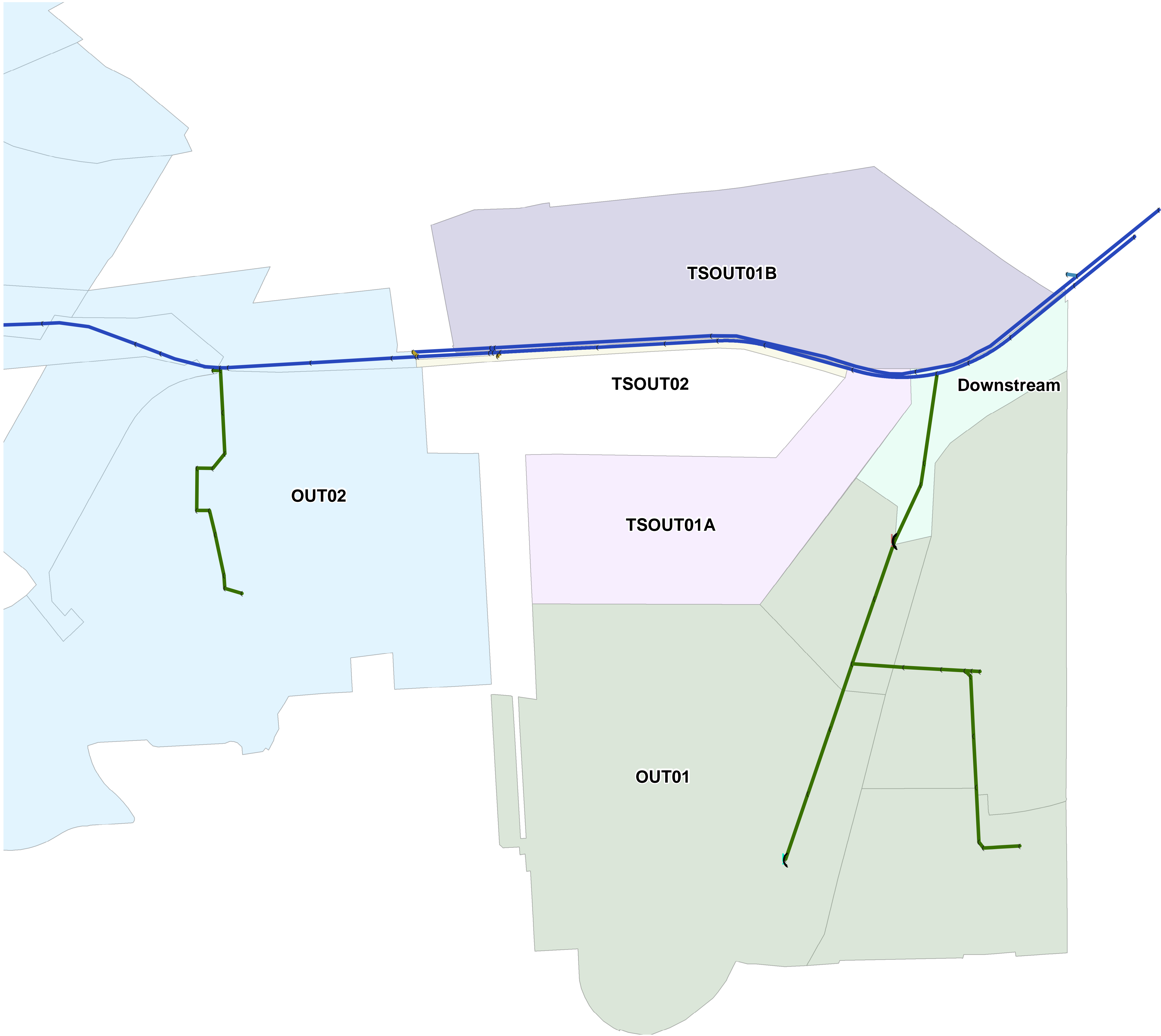


Dewberry

**BROWN AND
CALDWELL**

May 2009

Figure 4-5-2-C



Legend

- Manhole Flooding RPA**
- 3-Month 1-Hour Storm
 - 1-Year 24-Hour Storm
 - 2-Year 24-Hour Storm
 - 5-Year 24-Hour Storm
 - 10-Year 24-Hour Storm
 - 15-Year 24-Hour Storm
 - 20-Year 24-Hour Storm
 - No Flooding <= 20-Yr Storm
- Sewer Conduit Height**
- < 10 Inches
 - 10-19 Inches
 - 20-29 Inches
 - 30-39 Inches
 - 40-72 Inches
 - > 72 Inches

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.

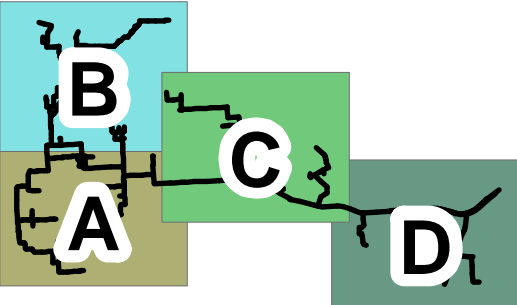
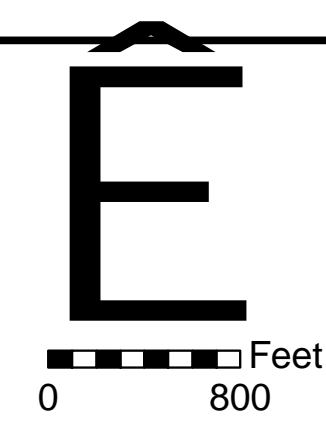
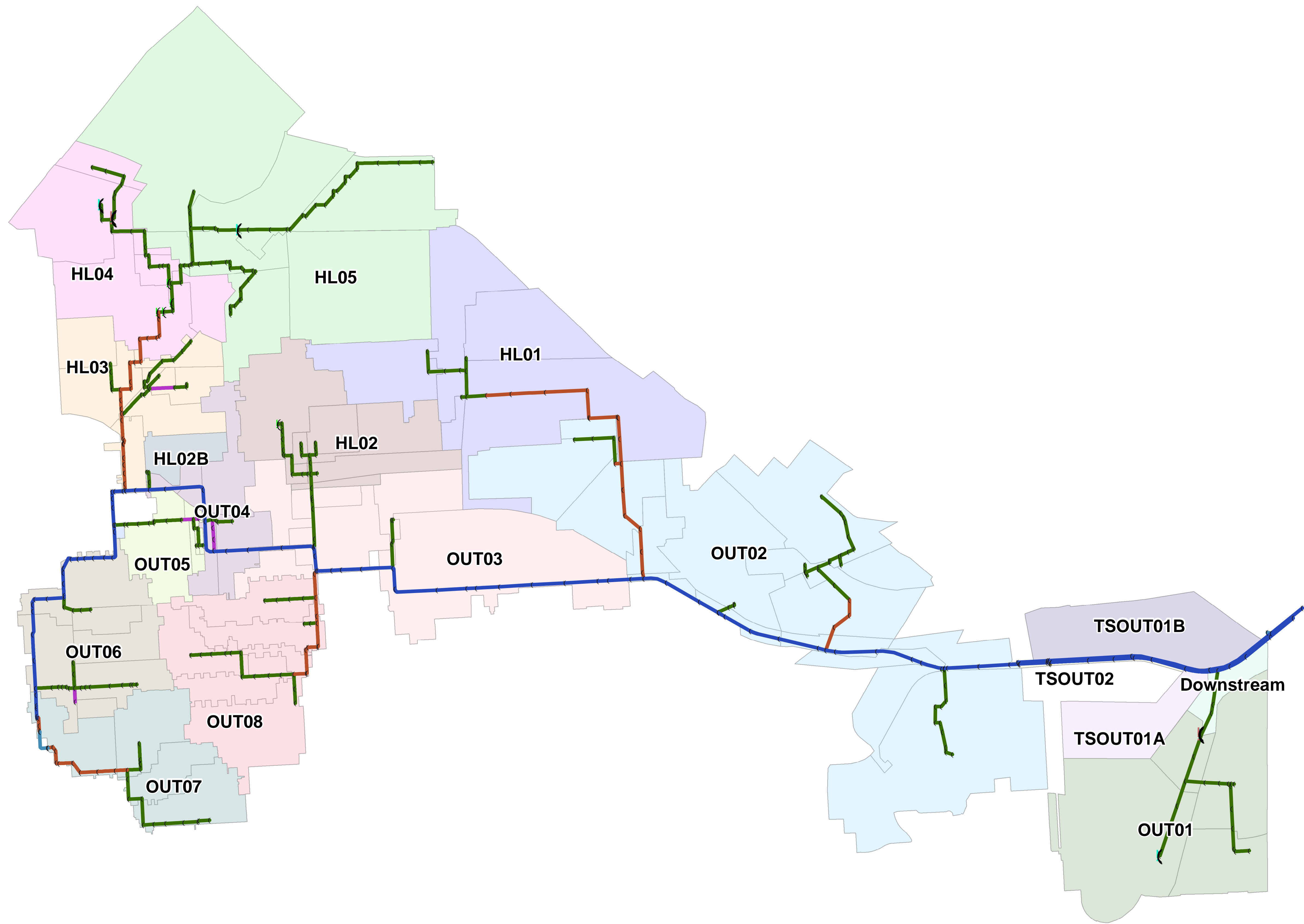


Figure 4-5-2-D



Legend

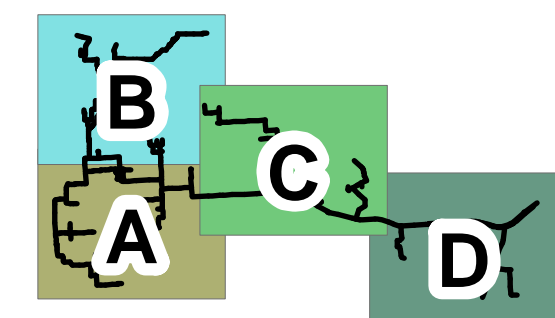
Manhole Flooding RPA

- 3-Month 1-Hour
- 1-Year 24-Hour Storm
- 2-Year 24-Hour Storm
- 5-Year 24-Hour Storm
- 10-Year 24-Hour Storm
- 15-Year 24-Hour Storm
- 20-Year 24-Hour Storm
- No Flooding <= 20-Yr Storm

Sewer Conduit Height

- < 10 Inches
- 10-19 Inches
- 20-29 Inches
- 30-39 Inches
- 40-72 Inches
- > 72 Inches

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.



BROWN AND CALDWELL

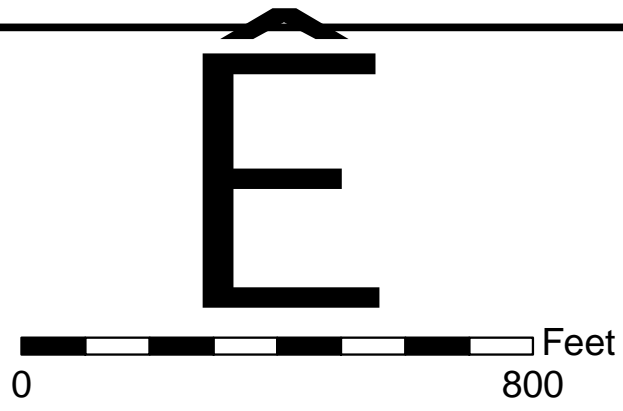
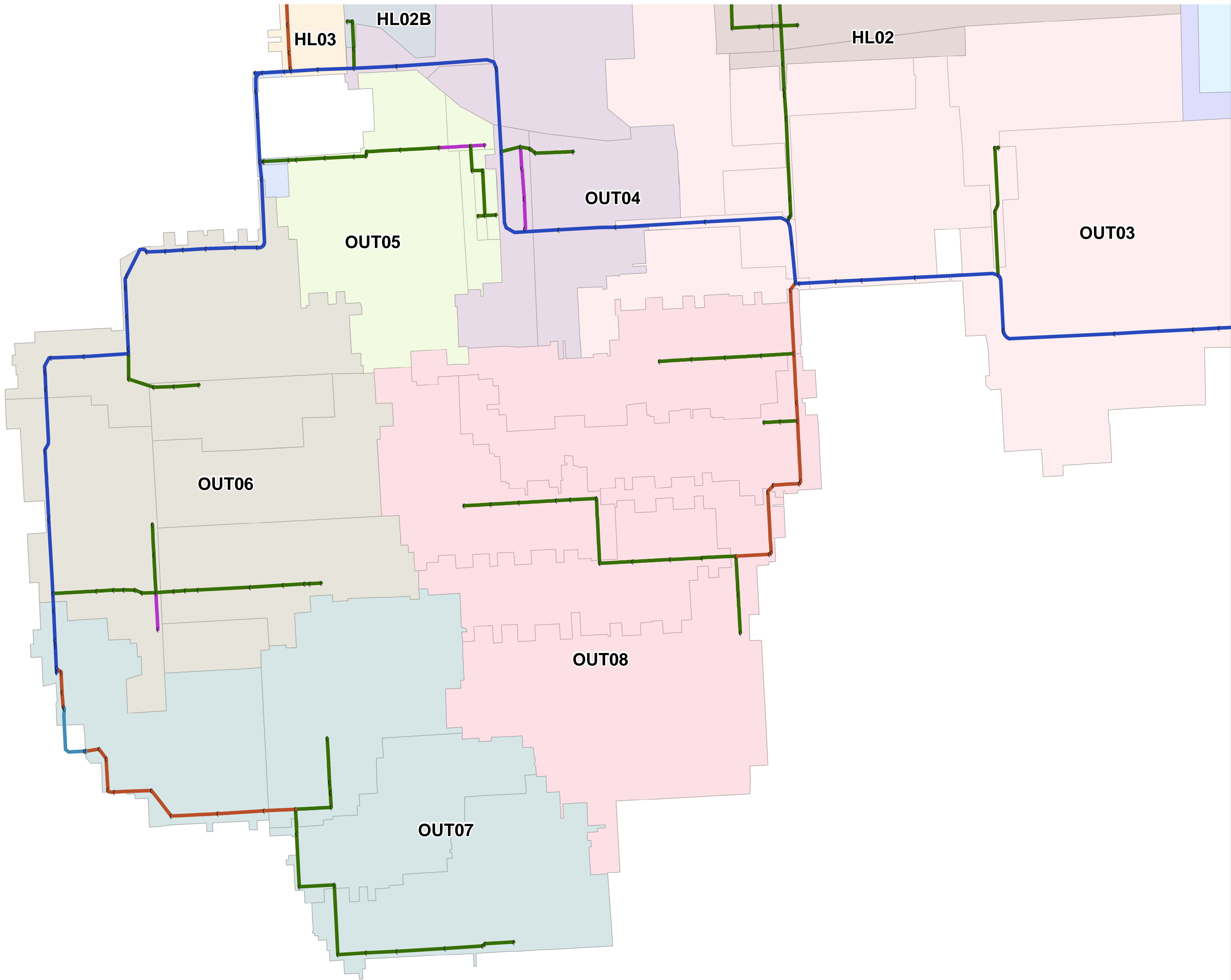
May 2009

Outfall	Baseline Conditions	Flooding Return Period Analysis	Inactive Boundary Conditions
---------	---------------------	---------------------------------	------------------------------

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan



Figure 4-5-3

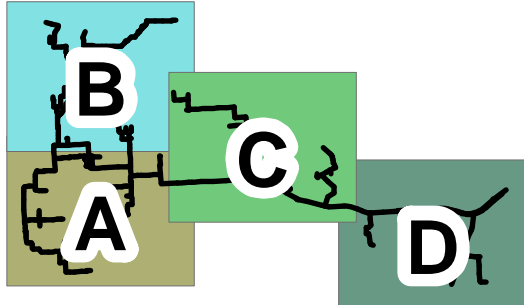


Legend

- Manhole Flooding RPA**
- 3-Month 1-Hour
 - 1-Year 24-Hour Storm
 - 2-Year 24-Hour Storm
 - 5-Year 24-Hour Storm
 - 10-Year 24-Hour Storm
 - 15-Year 24-Hour Storm
 - 20-Year 24-Hour Storm
 - No Flooding <= 20-Yr Storm

- Sewer Conduit Height**
- < 10 Inches
 - 10-19 Inches
 - 20-29 Inches
 - 30-39 Inches
 - 40-72 Inches
 - > 72 Inches

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.



Dewberry



BROWN AND
CALDWELL

May 2009

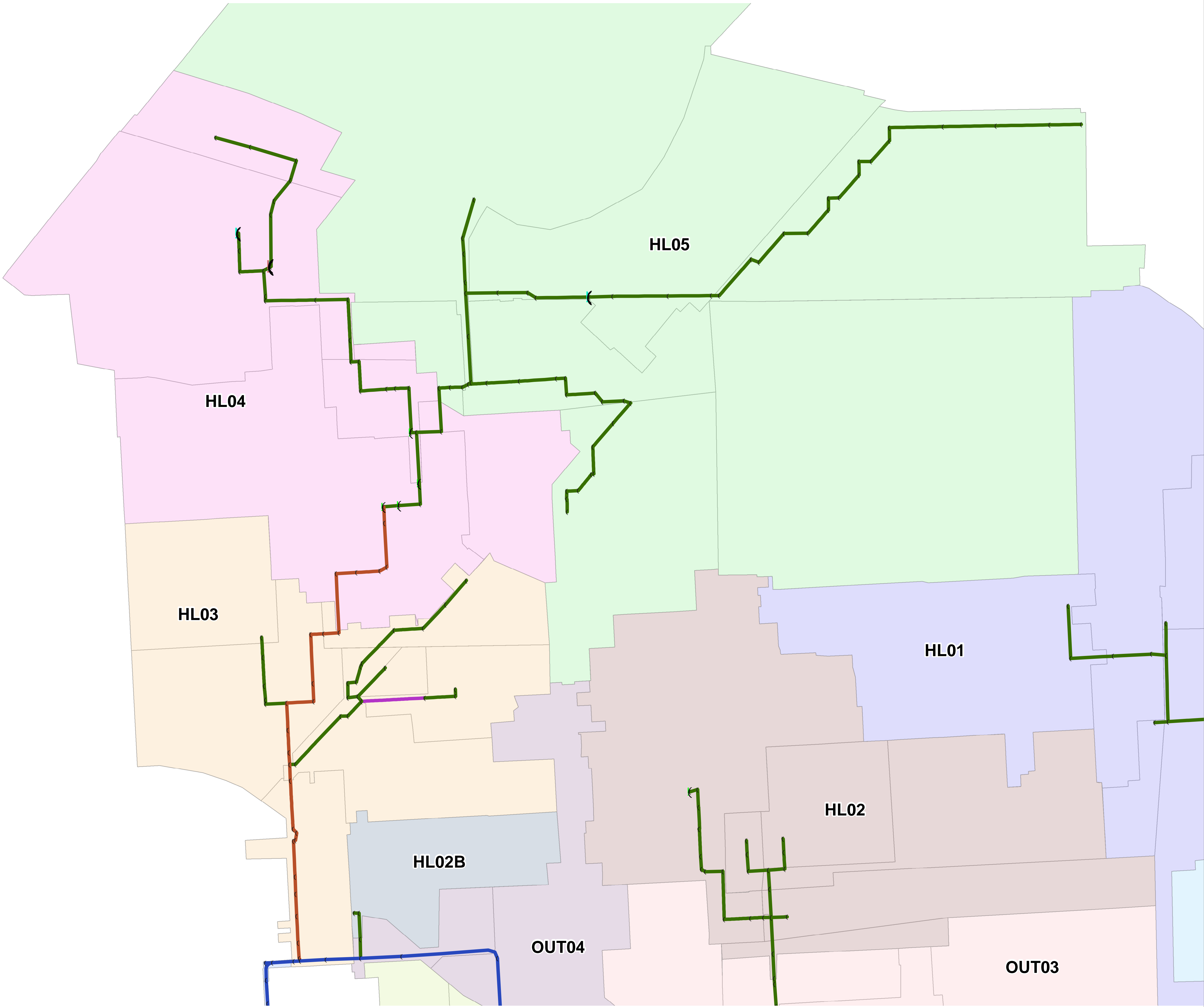
Outfall
Baseline Conditions
Flooding Return
Period Analysis

Inactive Boundary Conditions

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan



Figure 4-5-3-A



Legend

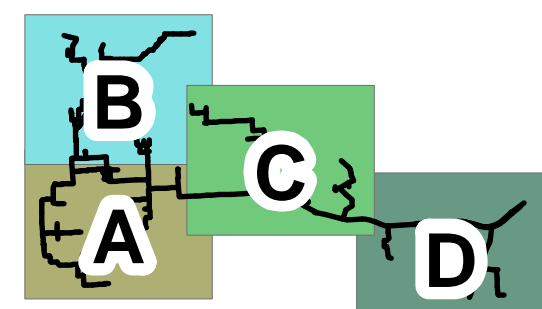
Manhole Flooding RPA

- 3-Month 1-Hour
- 1-Year 24-Hour Storm
- 2-Year 24-Hour Storm
- 5-Year 24-Hour Storm
- 10-Year 24-Hour Storm
- 15-Year 24-Hour Storm
- 20-Year 24-Hour Storm
- No Flooding <= 20-Yr Storm

Sewer Conduit Height

- < 10 Inches
- 10-19 Inches
- 20-29 Inches
- 30-39 Inches
- 40-72 Inches
- > 72 Inches

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.



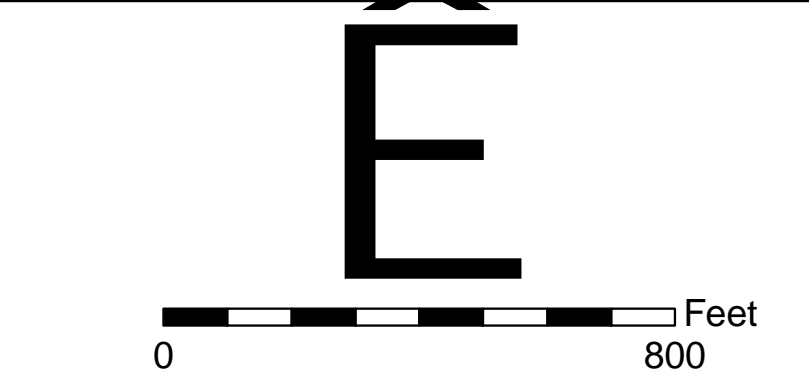
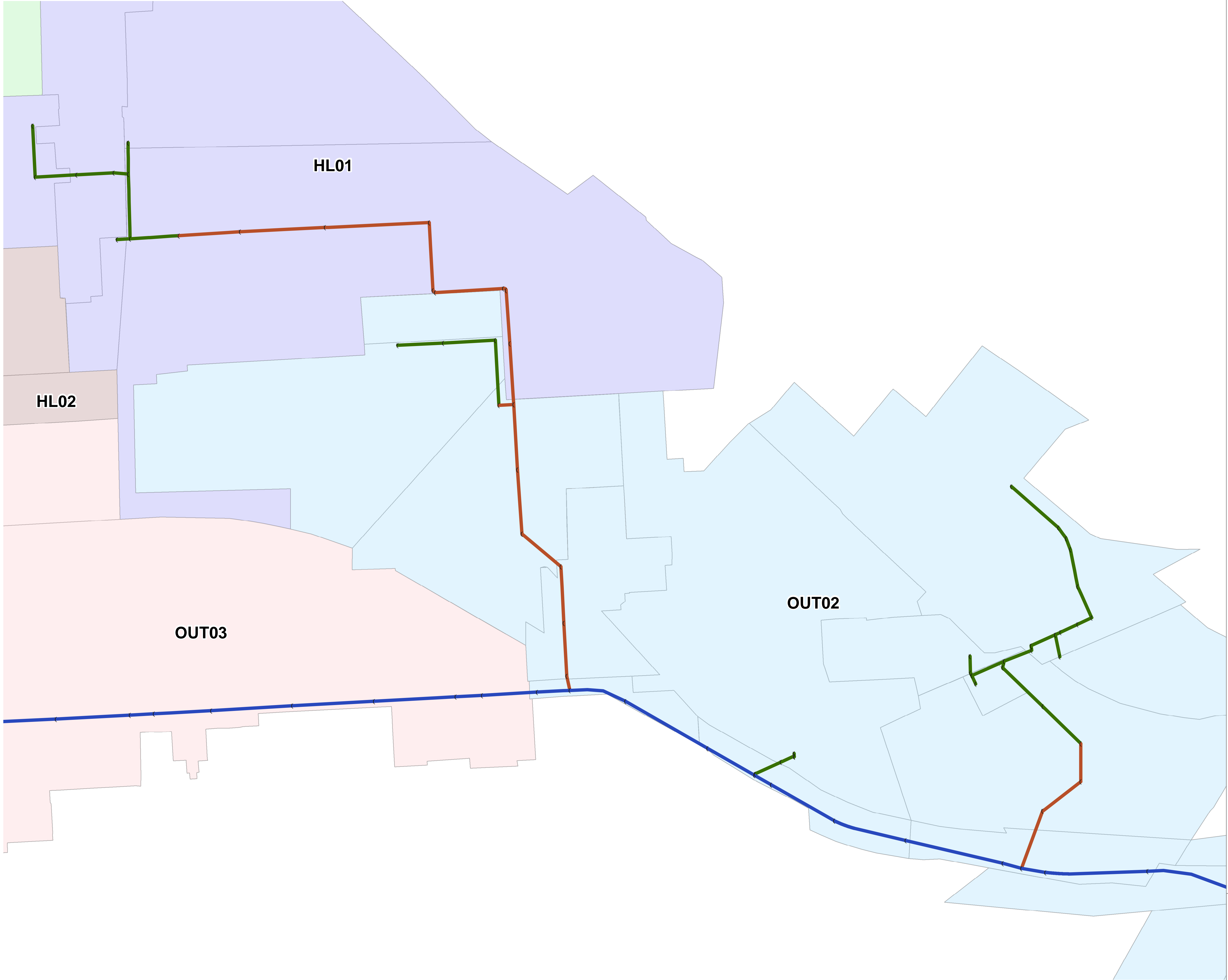
May 2009

Outfall
Baseline Conditions
Flooding Return
Period Analysis
Inactive Boundary Conditions

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan

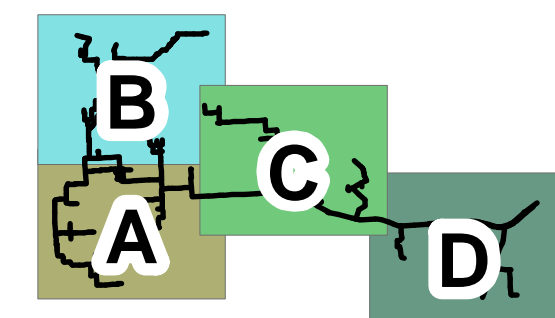




Figure 4-5-3-B



- Legend**
- Manhole Flooding RPA**
- 3-Month 1-Hour
 - 1-Year 24-Hour Storm
 - 2-Year 24-Hour Storm
 - 5-Year 24-Hour Storm
 - 10-Year 24-Hour Storm
 - 15-Year 24-Hour Storm
 - 20-Year 24-Hour Storm
 - No Flooding <= 20-Yr Storm
- Sewer Conduit Height**
- < 10 Inches
 - 10-19 Inches
 - 20-29 Inches
 - 30-39 Inches
 - 40-72 Inches
 - > 72 Inches

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.

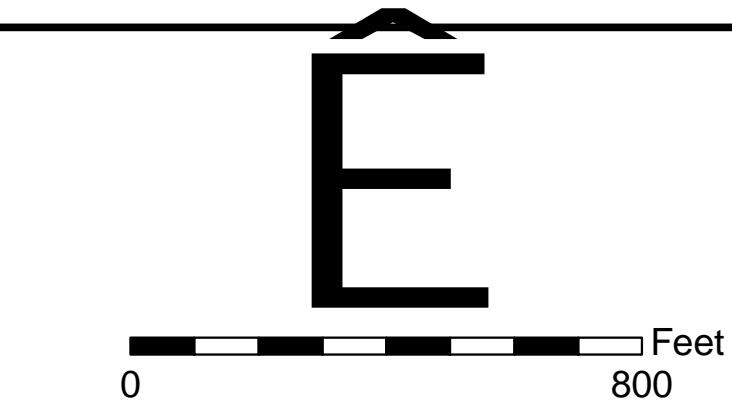
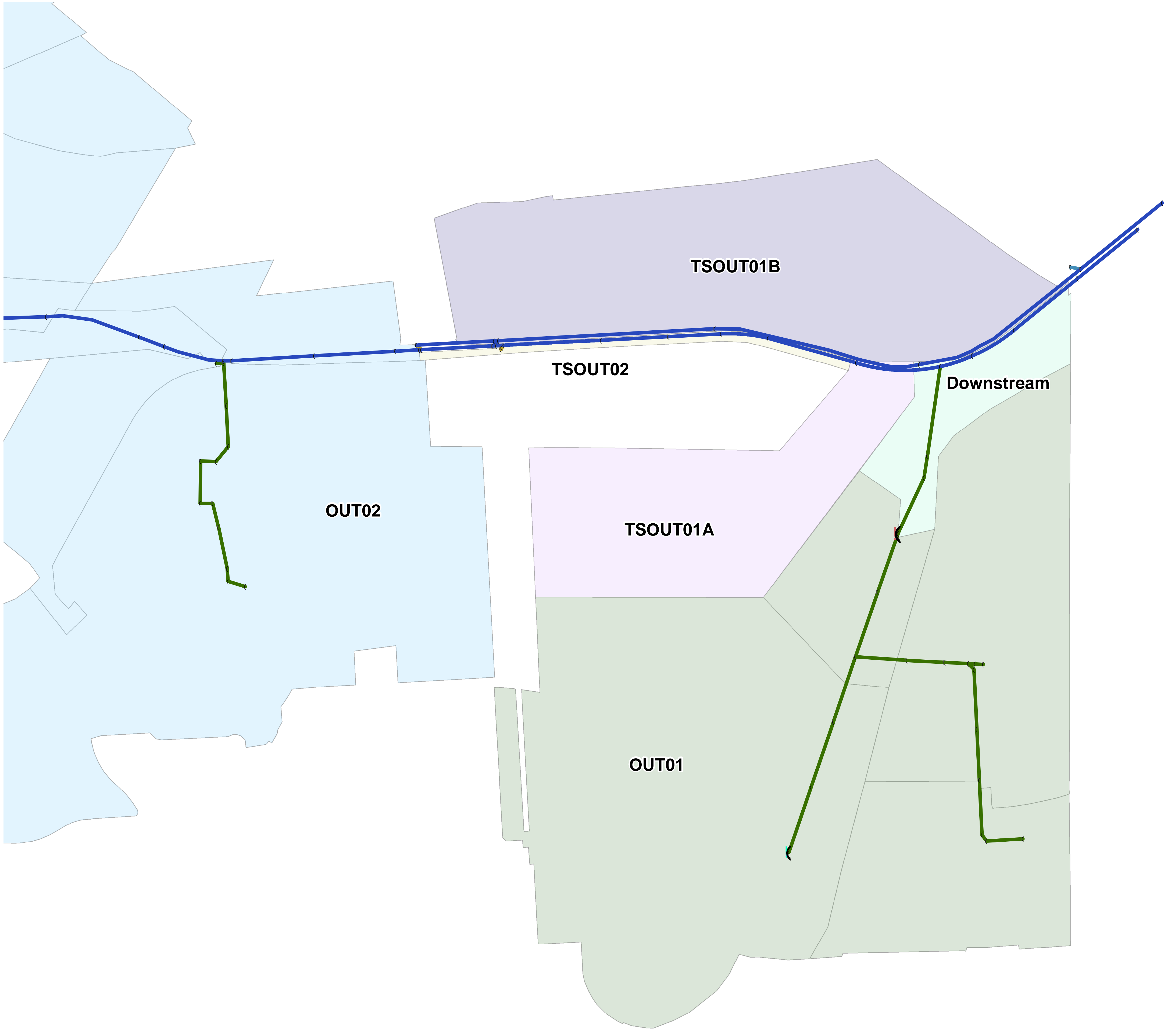




May 2009

Outfall Baseline Conditions Flooding Return Period Analysis	Project 1039 Outfall Collection System Evaluation & Sewershed Plan

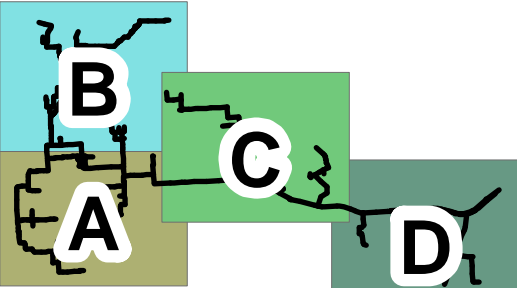
Figure 4-5-3-C



Legend

- Manhole Flooding RPA**
- 3-Month 1-Hour
 - 1-Year 24-Hour Storm
 - 2-Year 24-Hour Storm
 - 5-Year 24-Hour Storm
 - 10-Year 24-Hour Storm
 - 15-Year 24-Hour Storm
 - 20-Year 24-Hour Storm
 - No Flooding <= 20-Yr Storm
- Sewer Conduit Height**
- < 10 Inches
 - 10-19 Inches
 - 20-29 Inches
 - 30-39 Inches
 - 40-72 Inches
 - > 72 Inches

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.



Dewberry



BROWN AND
CALDWELL

May 2009

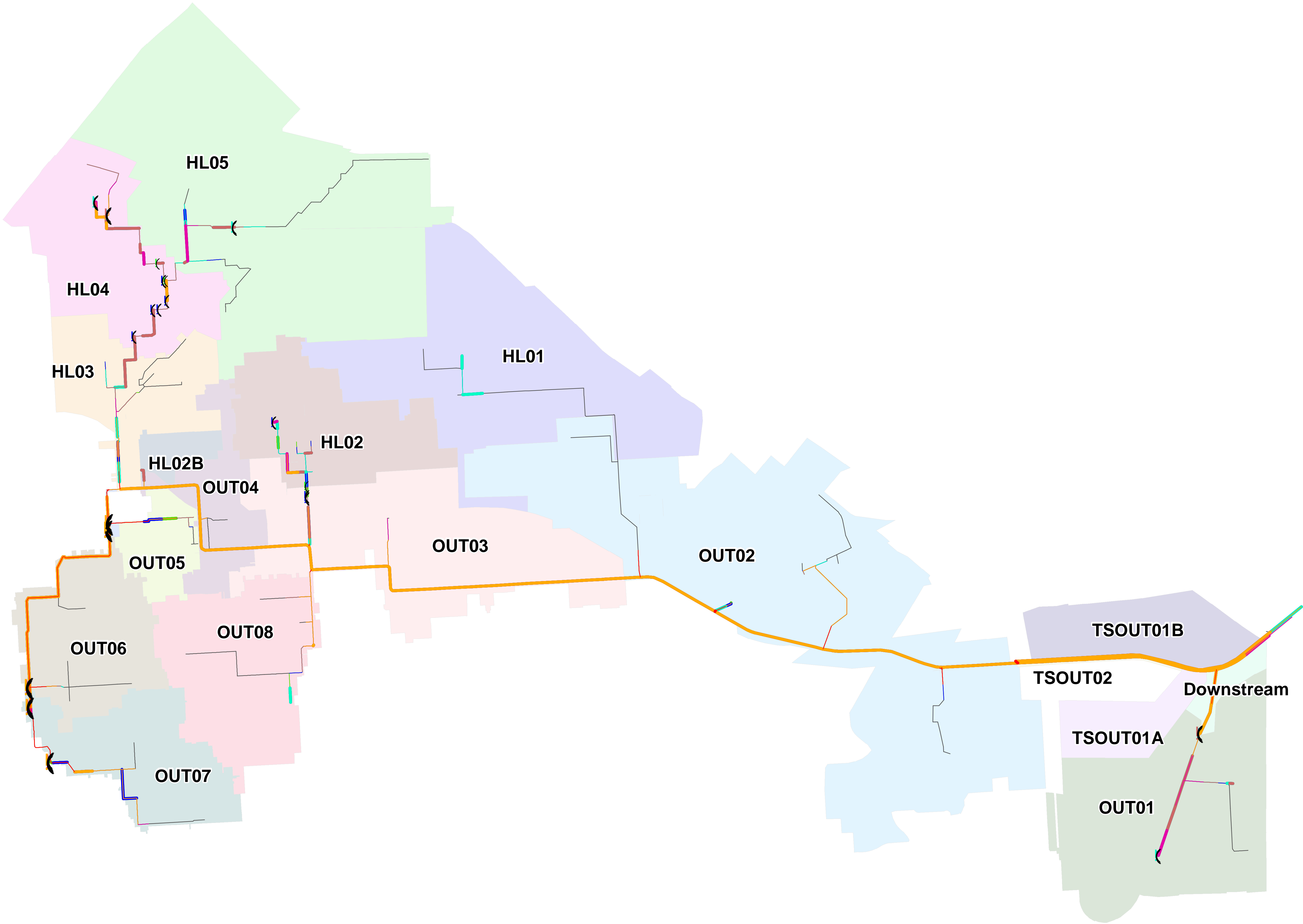
Outfall
Baseline Conditions
Flooding Return
Period Analysis

Inactive Boundary Conditions

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan



Figure 4-5-3-D

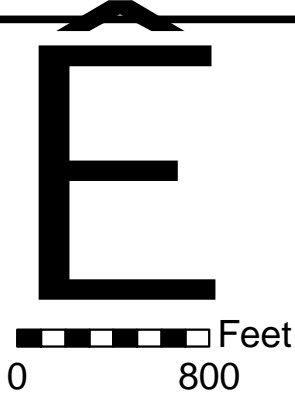
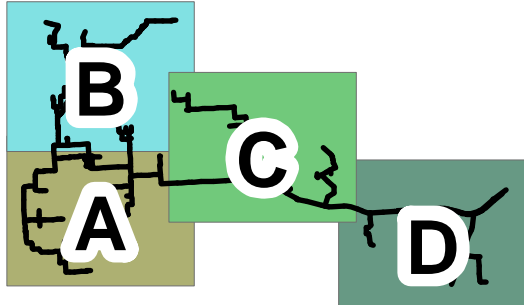


Legend

- Manhole Flooding RPA**
- 3-Month 1-Hour Storm
 - 1-Year 24-Hour Storm
 - 2-Year 24-Hour Storm
 - 5-Year 24-Hour Storm
 - 10-Year 24-Hour Storm
 - 15-Year 24-Hour Storm
 - 20-Year 24-Hour Storm

- Pipe Surcharge RPA**
- 3-Month 1-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 1-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 2-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 5-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 10-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 15-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 20-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- No Surcharge**
- <= 20-Yr Storm

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.

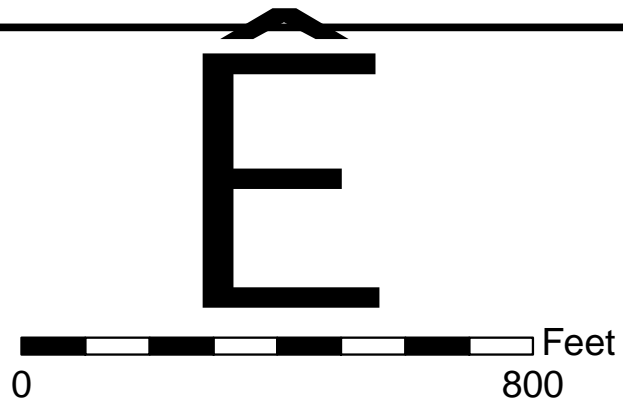
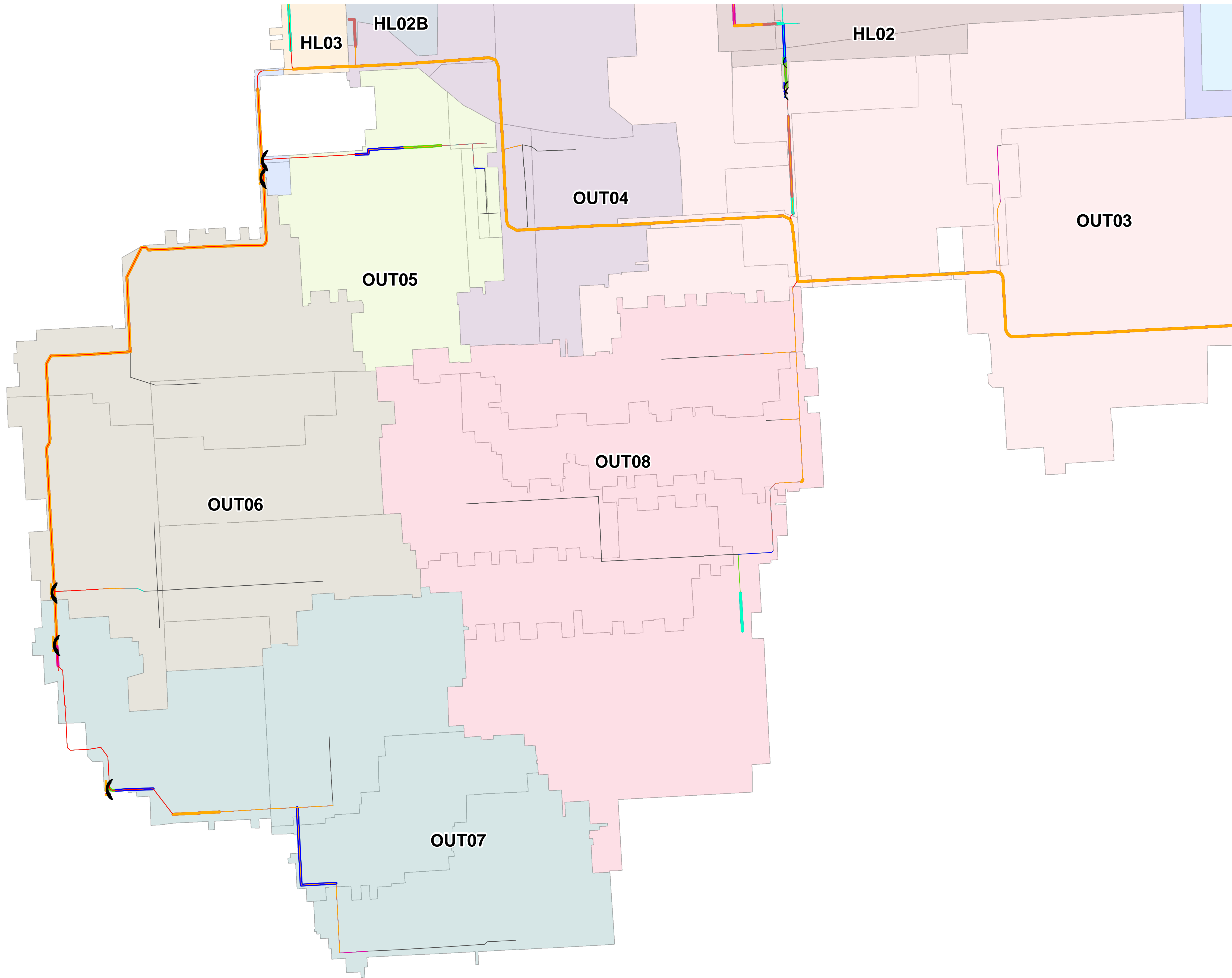


Outfall
Baseline Conditions
Hydraulic Restriction
Return Period Analysis
Active Boundary Conditions

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan



Figure 4-5-4



Legend

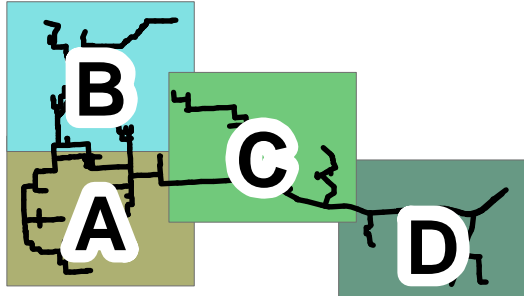
Manhole Flooding RPA

- 3-Month 1-Hour Storm
- 1-Year 24-Hour Storm
- 2-Year 24-Hour Storm
- 5-Year 24-Hour Storm
- 10-Year 24-Hour Storm
- 15-Year 24-Hour Storm
- 20-Year 24-Hour Storm

Pipe Surcharge RPA

- 3-Month 1-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 1-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 2-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 5-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 10-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 15-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 20-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- No Surcharge**
 - <= 20-Yr Storm

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.



Dewberry



BROWN AND
CALDWELL

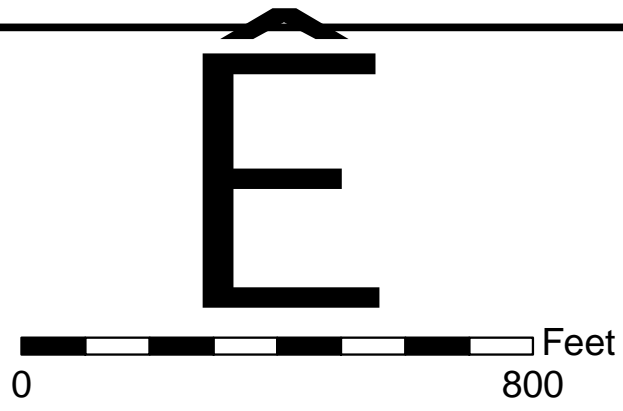
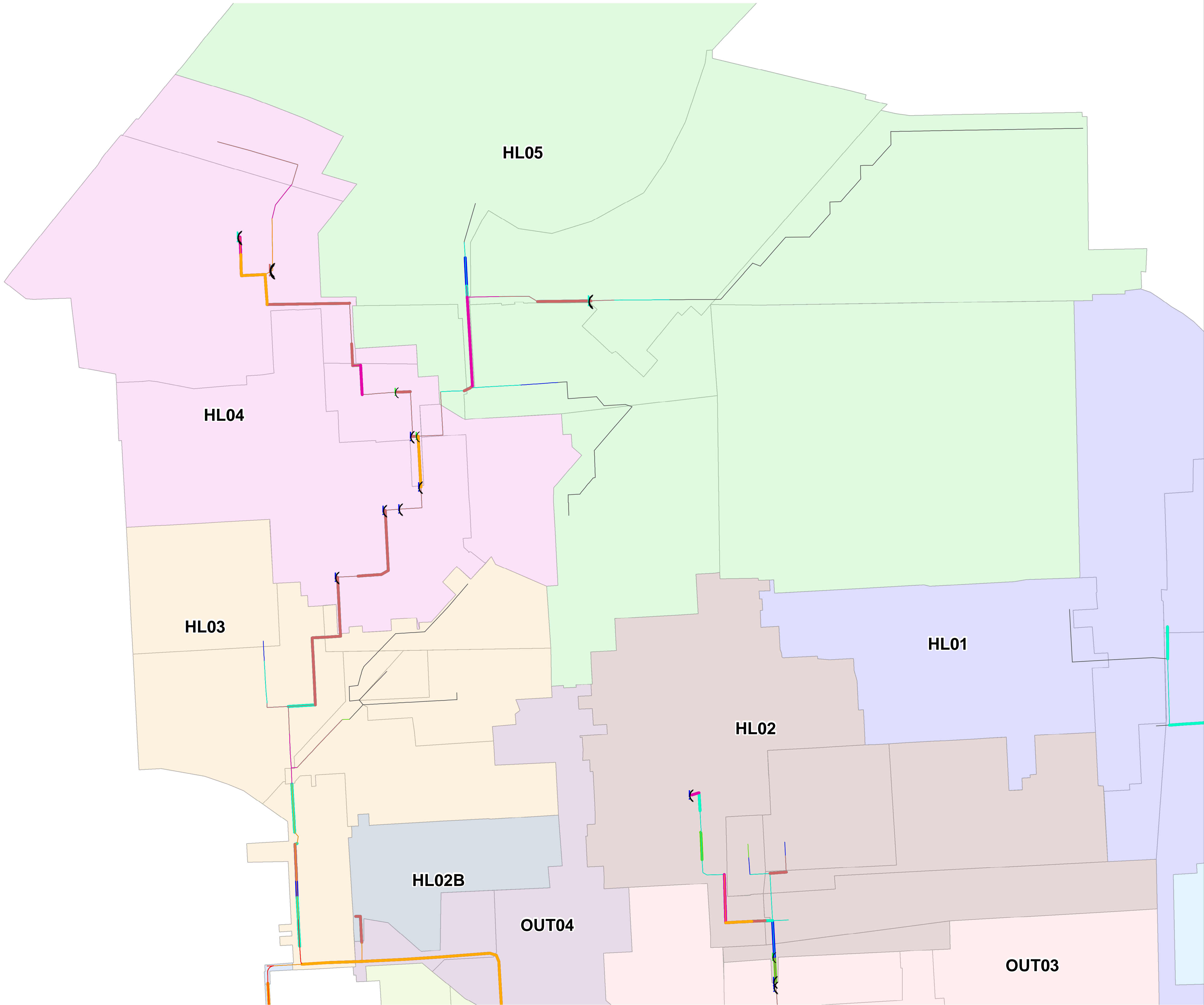
May 2009

Outfall
Baseline Conditions
Hydraulic Restriction
Return Period Analysis
Active Boundary Conditions

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan



Figure 4-5-4-A



Legend

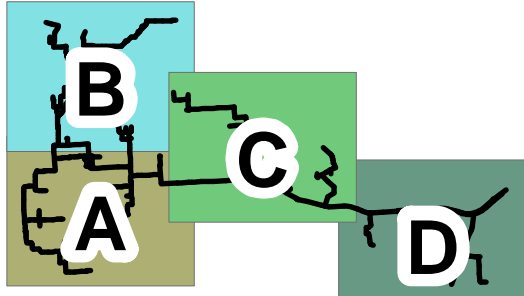
Manhole Flooding RPA

- 3-Month 1-Hour Storm
- 1-Year 24-Hour Storm
- 2-Year 24-Hour Storm
- 5-Year 24-Hour Storm
- 10-Year 24-Hour Storm
- 15-Year 24-Hour Storm
- 20-Year 24-Hour Storm

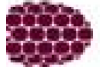
Pipe Surcharge RPA

- 3-Month 1-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 1-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 2-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 5-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 10-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 15-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 20-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- No Surcharge**
 - <= 20-Yr Storm

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.



Dewberry



BROWN AND
CALDWELL

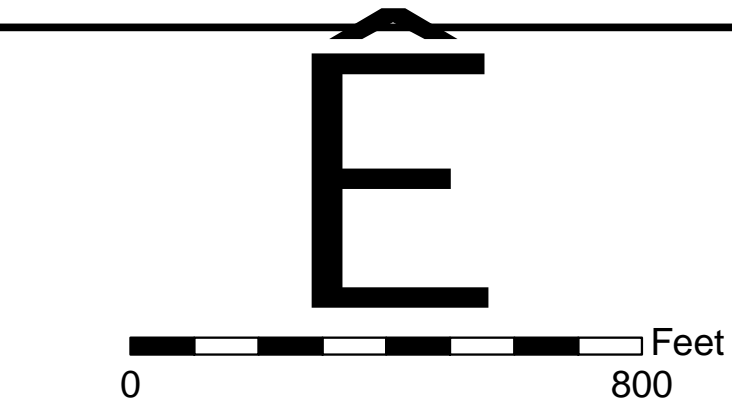
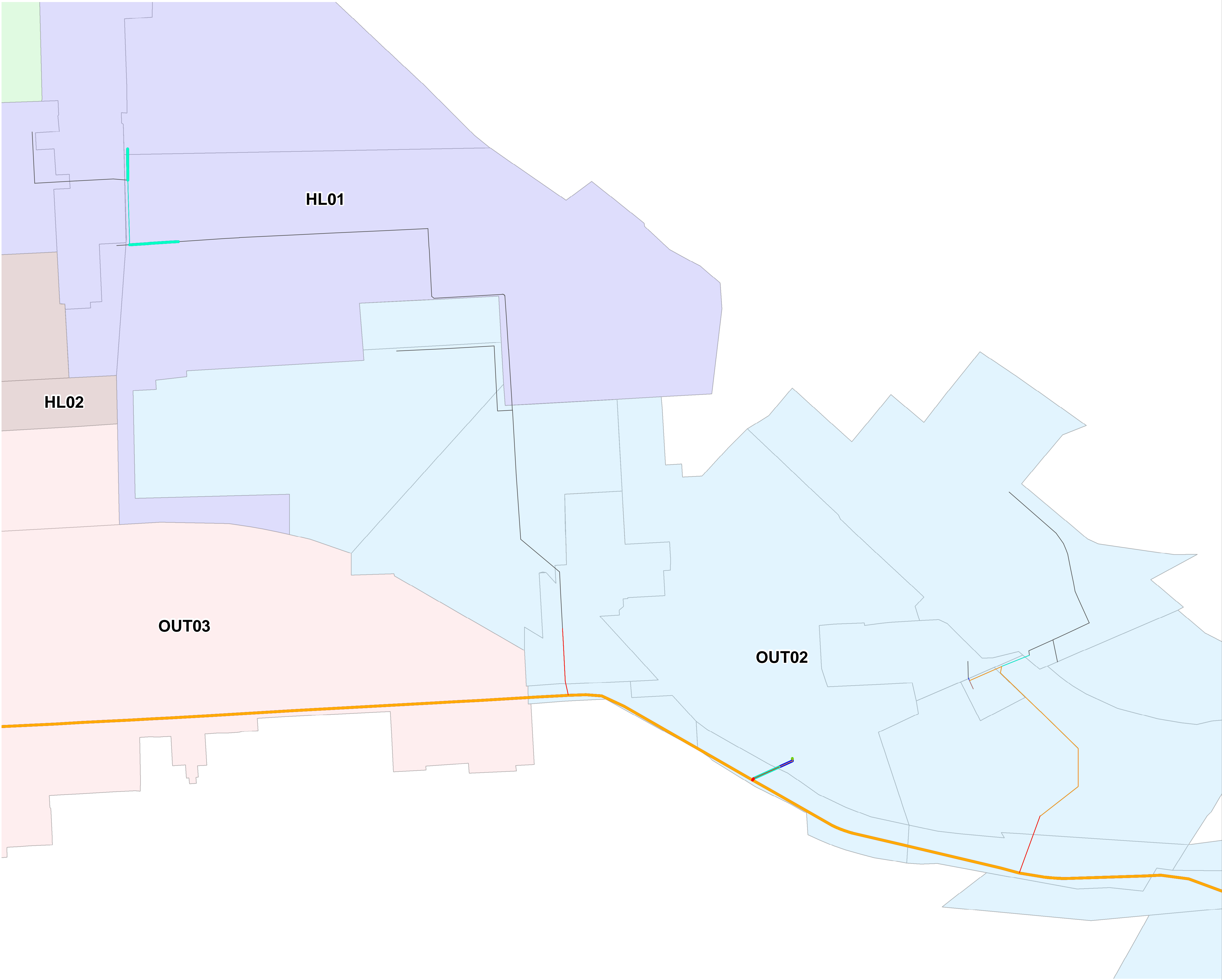
May 2009

Outfall
Baseline Conditions
Hydraulic Restriction
Return Period Analysis
Active Boundary Conditions

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan



Figure 4-5-4-B



Legend

Manhole Flooding RPA

- 3-Month 1-Hour Storm
- 1-Year 24-Hour Storm
- 2-Year 24-Hour Storm
- 5-Year 24-Hour Storm
- 10-Year 24-Hour Storm
- 15-Year 24-Hour Storm
- 20-Year 24-Hour Storm

Pipe Surcharge RPA

- 3-Month 1-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 1-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 2-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 5-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 10-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 15-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 20-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- No Surcharge**
 - <= 20-Yr Storm

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.

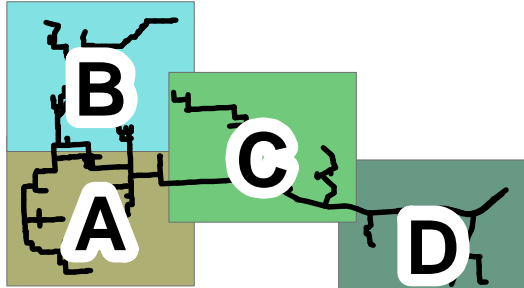


Figure 4-5-4-C

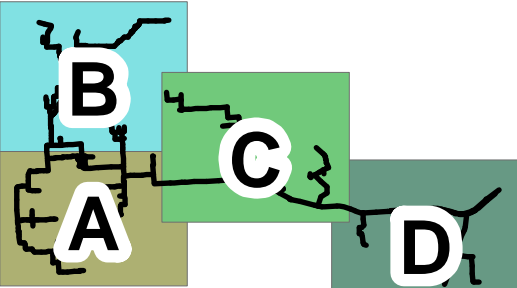


Legend

- Manhole Flooding RPA**
- 3-Month 1-Hour Storm
 - 1-Year 24-Hour Storm
 - 2-Year 24-Hour Storm
 - 5-Year 24-Hour Storm
 - 10-Year 24-Hour Storm
 - 15-Year 24-Hour Storm
 - 20-Year 24-Hour Storm

- Pipe Surcharge RPA**
- 3-Month 1-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 1-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 2-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 5-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 10-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 15-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 20-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- No Surcharge**
- <= 20-Yr Storm

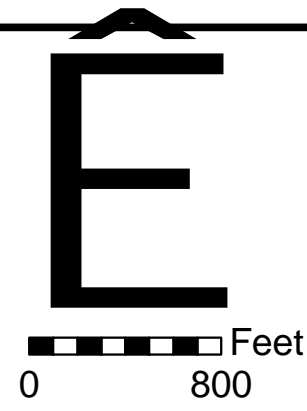
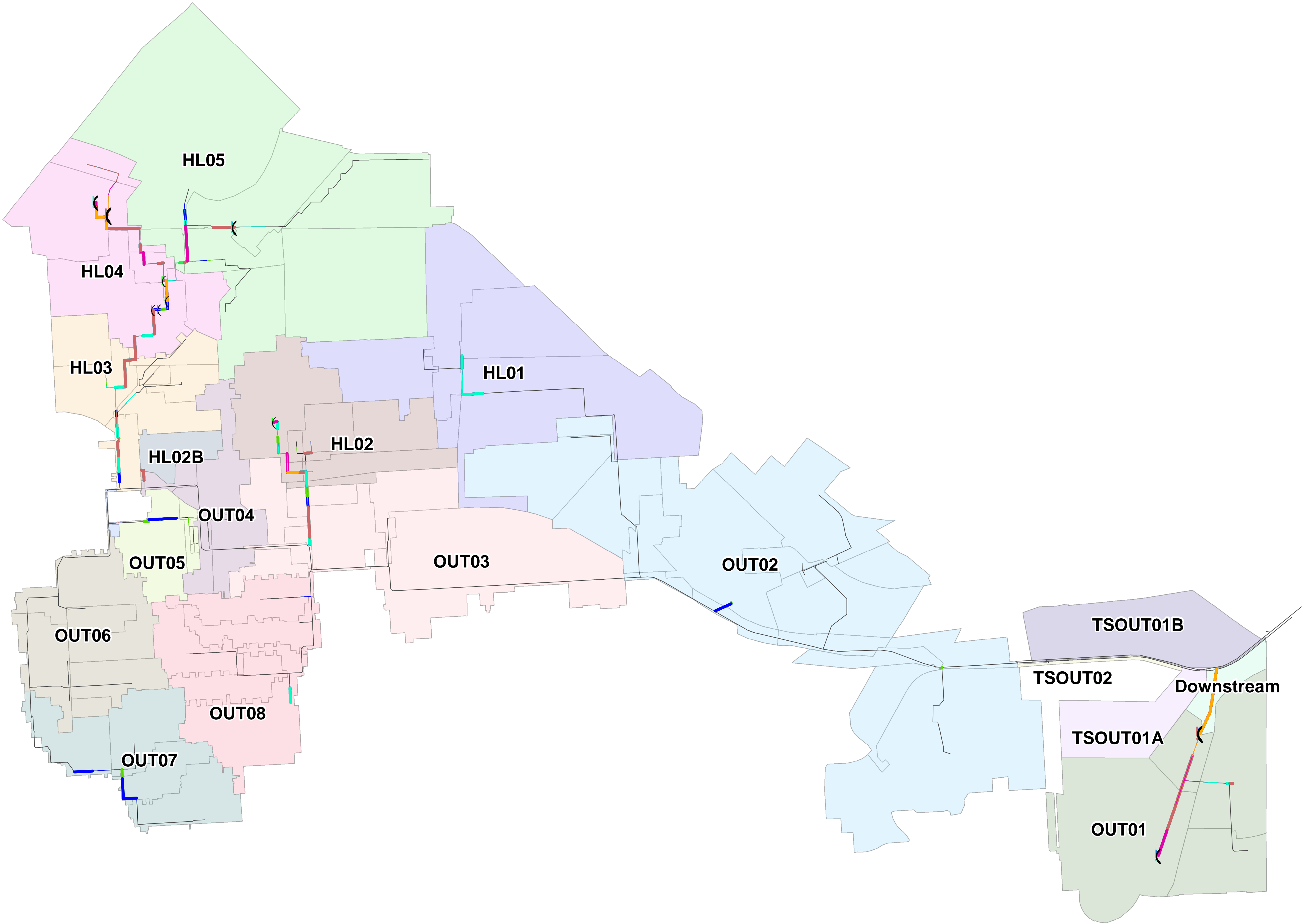
Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.



0 800 Feet



Figure 4-5-4-D



Legend

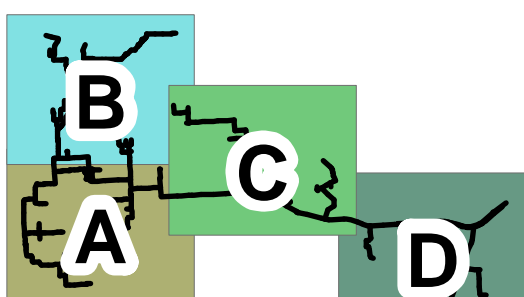
Manhole Flooding RPA

- 3-Month 1-Hour Storm
- 1-Year 24-Hour Storm
- 2-Year 24-Hour Storm
- 5-Year 24-Hour Storm
- 10-Year 24-Hour Storm
- 15-Year 24-Hour Storm
- 20-Year 24-Hour Storm

Pipe Surcharge RPA

- 3-Month 1-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 1-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 2-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 5-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 10-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 15-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 20-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- No Surcharge**
 - 0.05 - 2.00

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.



Dewberry

BROWN AND
CALDWELL

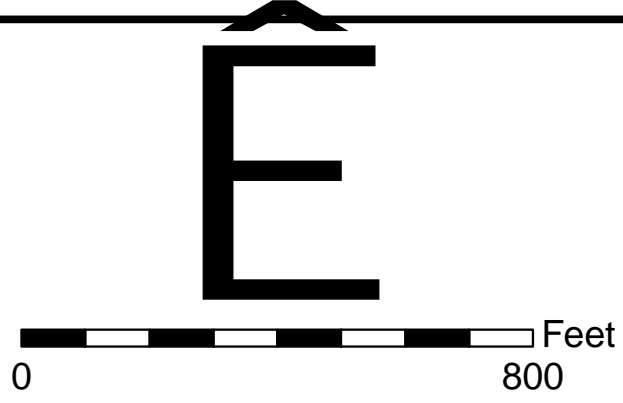
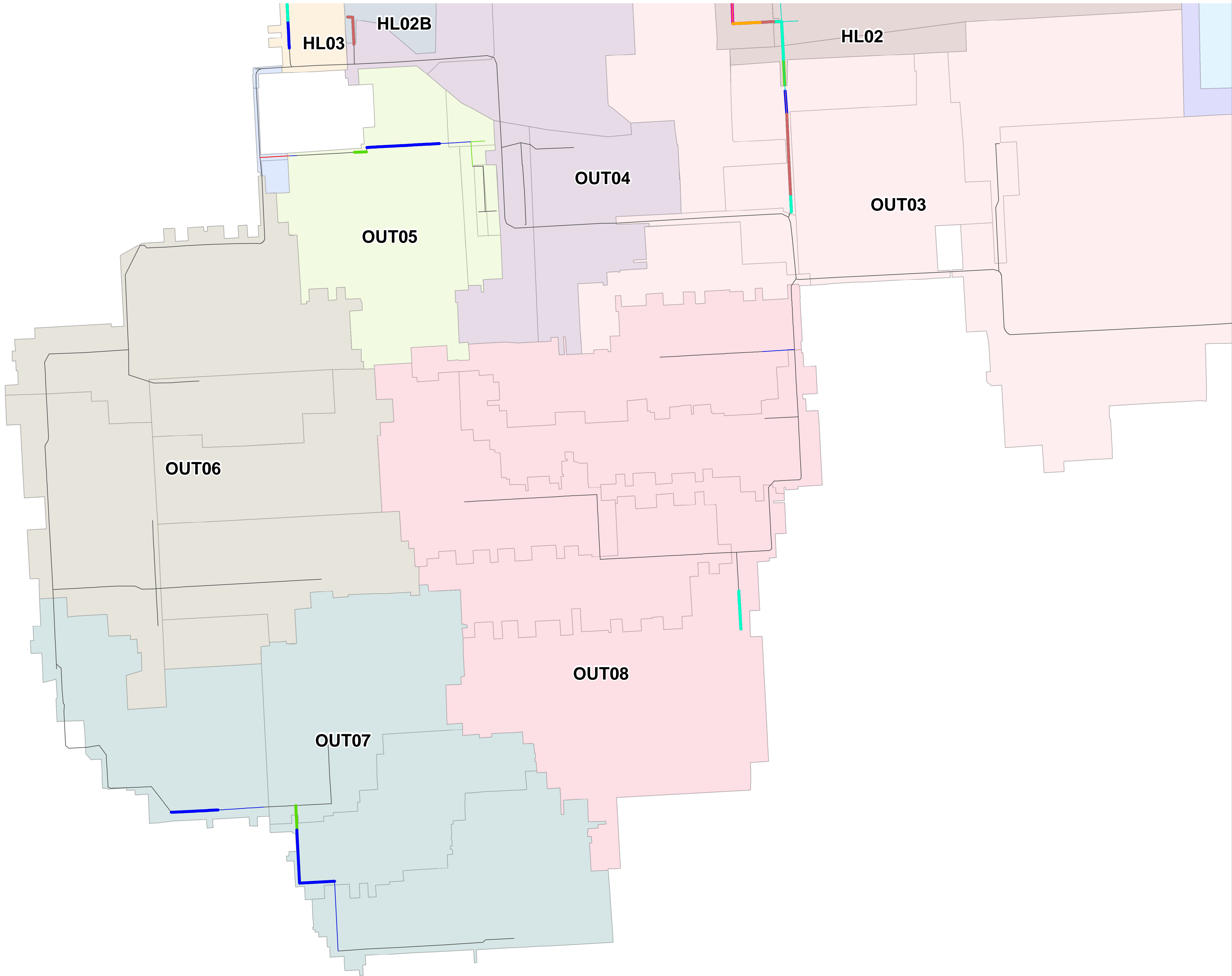
May 2009

Outfall
Baseline Conditions
Hydraulic Restriction
Return Period Analysis
Inactive Boundary Conditions

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan



Figure 4-5-5



Legend

Manhole Flooding RPA

- 3-Month 1-Hour Storm
- 1-Year 24-Hour Storm
- 2-Year 24-Hour Storm
- 5-Year 24-Hour Storm
- 10-Year 24-Hour Storm
- 15-Year 24-Hour Storm
- 20-Year 24-Hour Storm

Pipe Surcharge RPA

- 3-Month 1-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 1-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 2-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 5-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 10-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 15-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 20-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- No Surcharge**
 - 0.05 - 2.00

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.

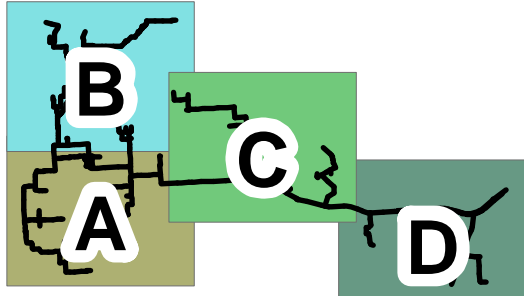
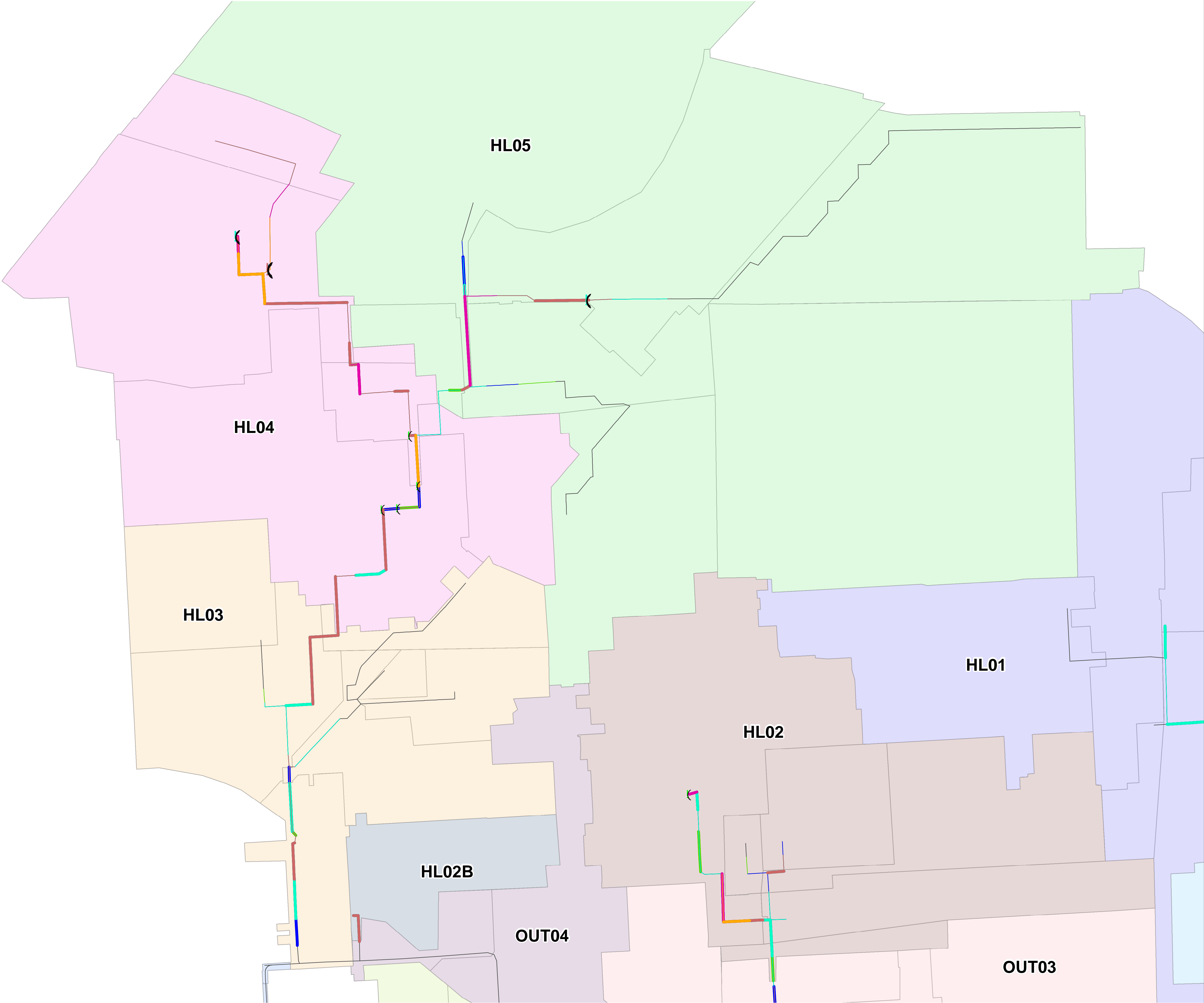


Figure 4-5-5-A



- Legend**
- Manhole Flooding RPA**
- 3-Month 1-Hour Storm
 - 1-Year 24-Hour Storm
 - 2-Year 24-Hour Storm
 - 5-Year 24-Hour Storm
 - 10-Year 24-Hour Storm
 - 15-Year 24-Hour Storm
 - 20-Year 24-Hour Storm
- Pipe Surcharge RPA**
- 3-Month 1-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 1-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 2-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 5-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 10-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 15-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 20-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- No Surcharge**
- 0.05 - 2.00

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.

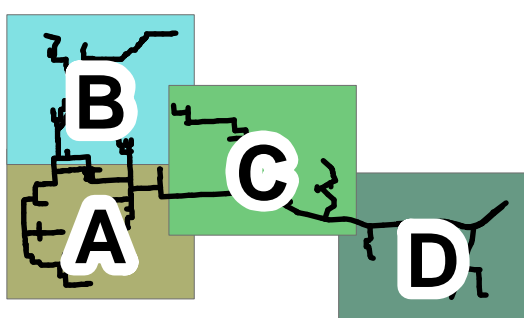
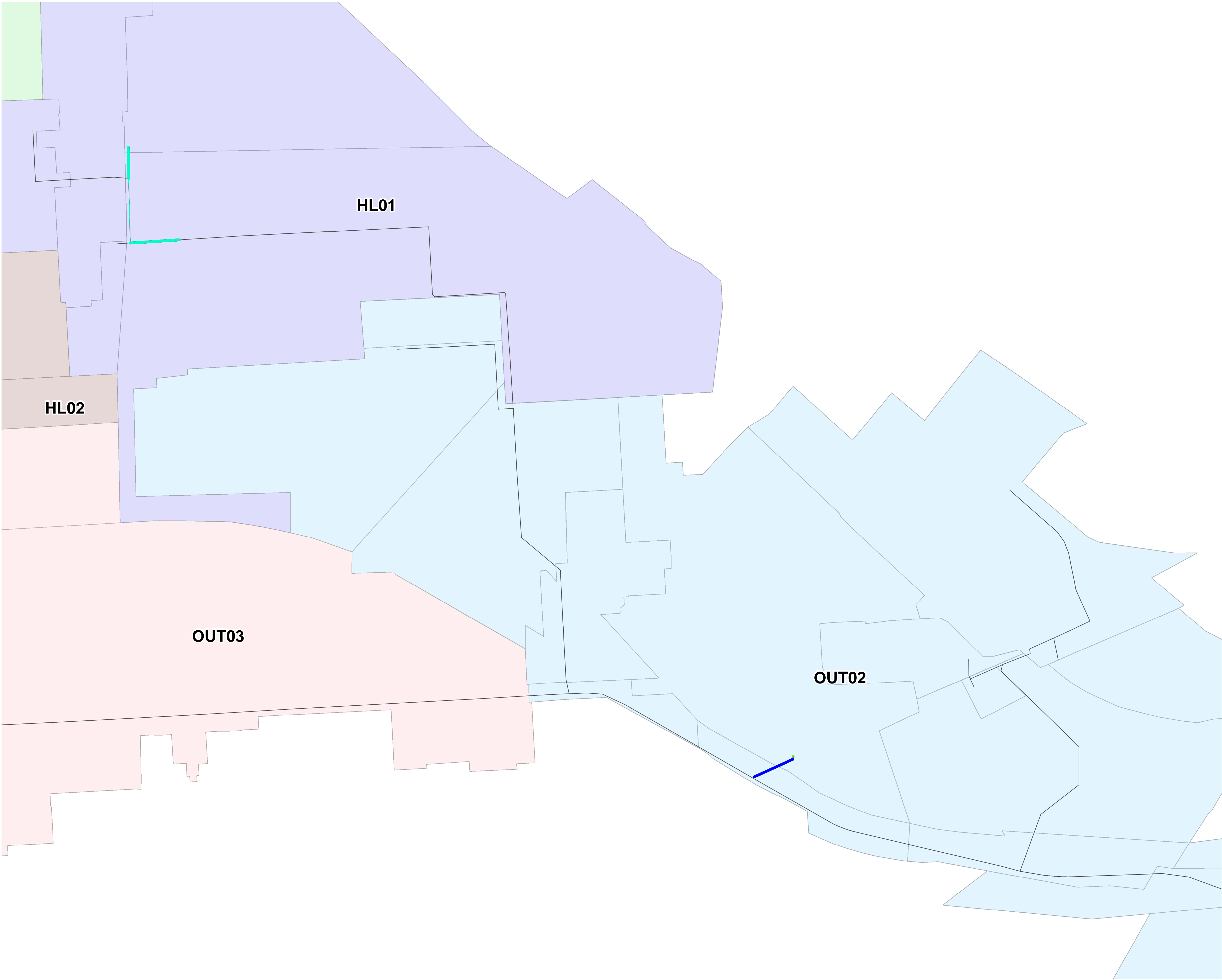


Figure 4-5-5-B



Legend

Manhole Flooding RPA

- 3-Month 1-Hour Storm
- 1-Year 24-Hour Storm
- 2-Year 24-Hour Storm
- 5-Year 24-Hour Storm
- 10-Year 24-Hour Storm
- 15-Year 24-Hour Storm
- 20-Year 24-Hour Storm

Pipe Surcharge RPA

3-Month 1-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

1-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

2-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

5-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

10-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

15-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

20-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

No Surcharge

- 0.05 - 2.00

Notes:

1) There are no engineered SSO facilities within the Outfall Sewershed.

May 2009

Outfall

Baseline Conditions

Hydraulic Restriction

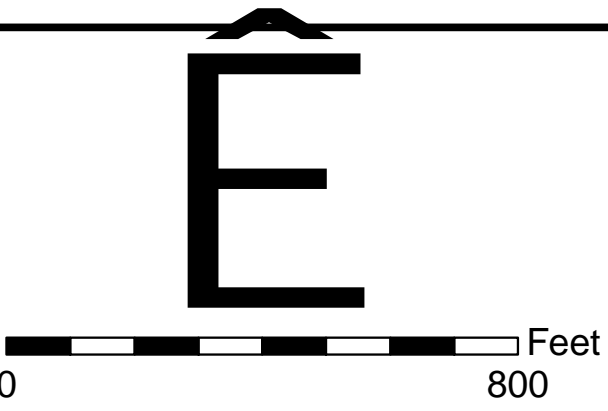
Return Period Analysis

Project 1039

Outfall Collection System

Evaluation & Sewershed Plan

Figure 4-5-5-C



Legend

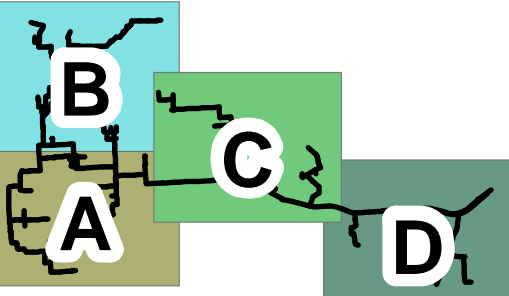
Manhole Flooding RPA

- 3-Month 1-Hour Storm
- 1-Year 24-Hour Storm
- 2-Year 24-Hour Storm
- 5-Year 24-Hour Storm
- 10-Year 24-Hour Storm
- 15-Year 24-Hour Storm
- 20-Year 24-Hour Storm

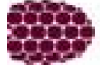
Pipe Surcharge RPA

- 3-Month 1-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 1-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 2-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 5-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 10-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 15-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 20-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- No Surcharge**
 - 0.05 - 2.00

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.



Dewberry



BROWN AND CALDWELL

May 2009

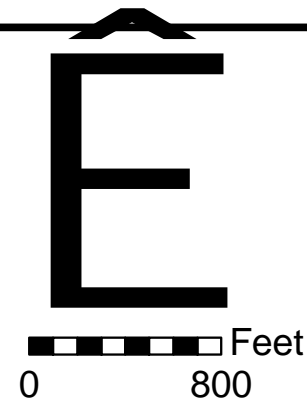
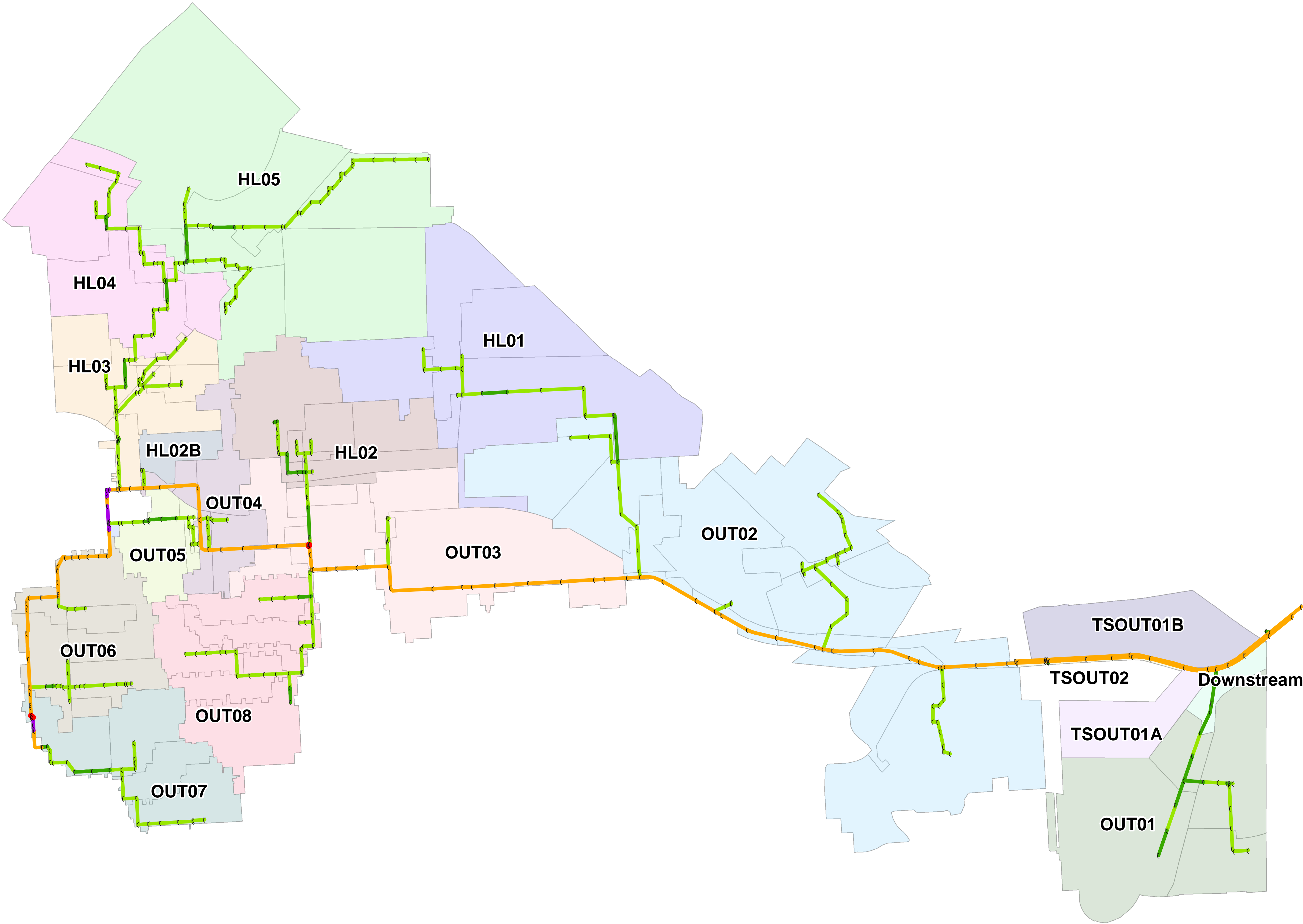
Outfall
Baseline Conditions
Hydraulic Restriction
Return Period Analysis

Inactive Boundary Conditions

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan



Figure 4-5-5-D



Legend

Manhole Flooding State

- (Red outline) Flooding
- (Black outline) No Flooding

Conduit Surcharge State

Pipe Percent Full

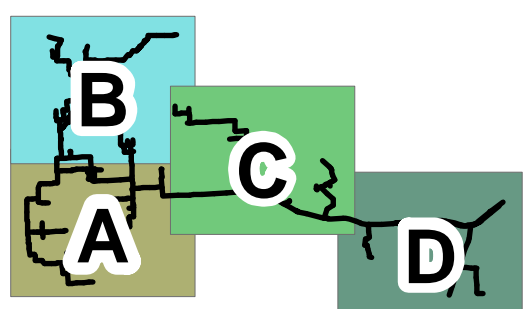
- (Light Green line) 0-24%
- (Dark Green line) 25-49%
- (Orange line) 50-74%
- (Purple line) 75-99%
- (Red line) Surcharged

Notes:

1) There are no engineered SSO facilities within the Outfall Sewershed.

2) Conduit Surcharge State is the model predicted maximum surcharge state for the simulated event.

3) Year 2025 Conditions for OUT05 sewershed assumes that OUT05 is disconnected from the 99 inch Outfall sewer, and that OUT05 drains to Low Level without backwater conditions.



BROWN AND
CALDWELL

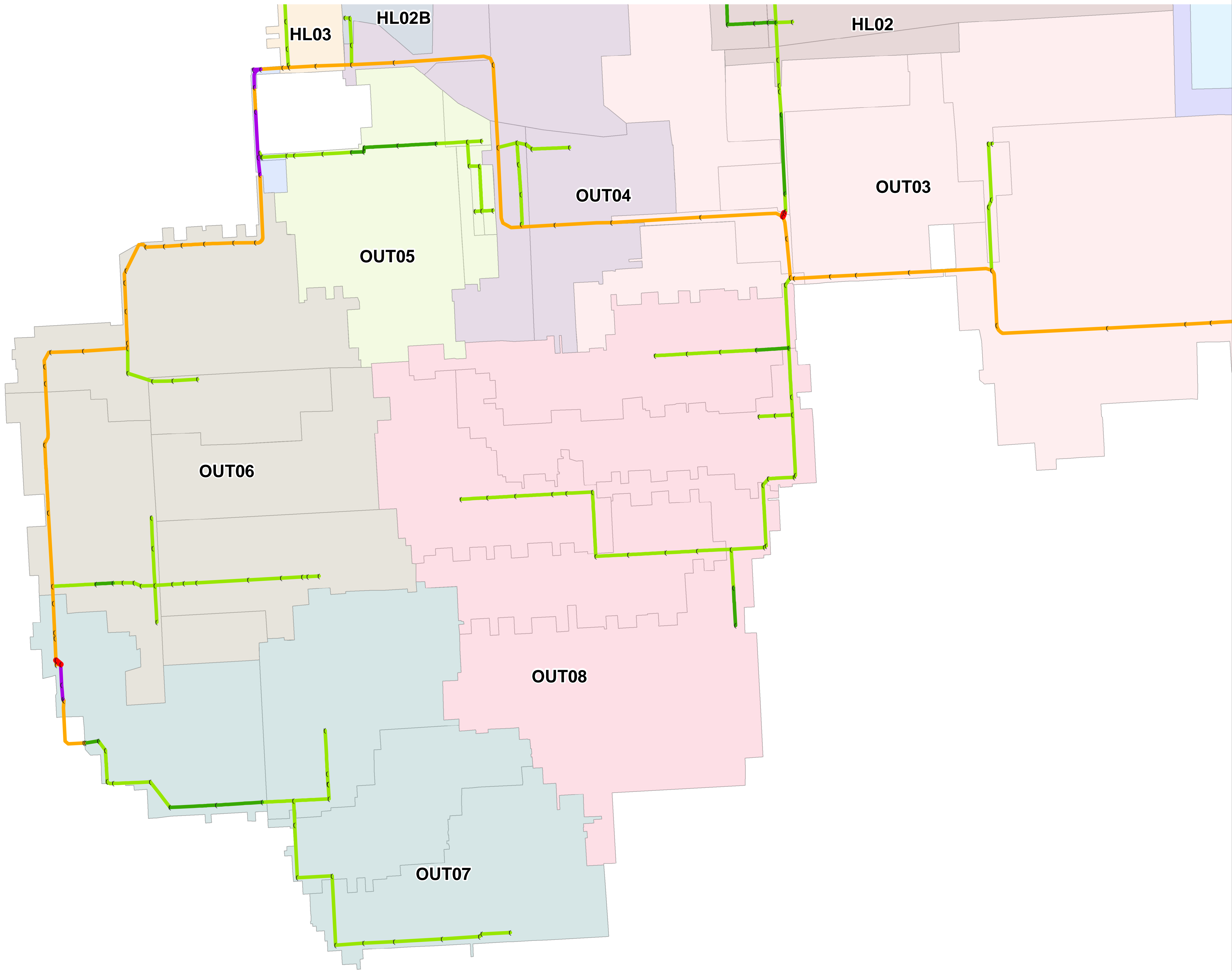
May 2009

Outfall
Year 2025 Conditions
Dry Weather
Capacity Assessment
Active Boundary Conditions

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan



Figure 5-2-1



Legend

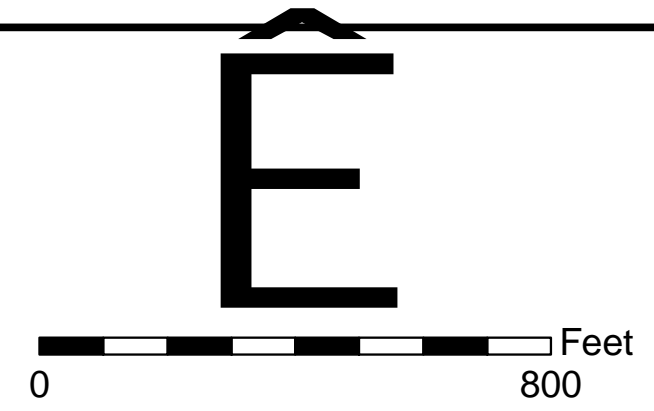
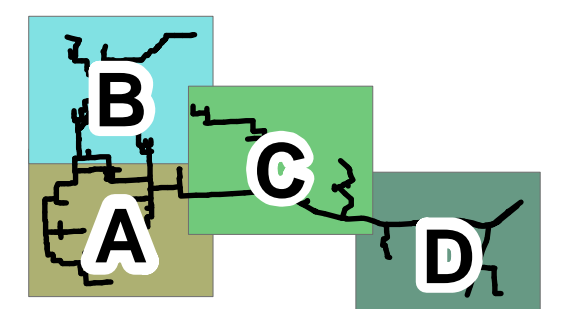
Manhole Flooding State

- () Flooding
- () No Flooding

Conduit Surcharge State

- Pipe Percent Full**
- 0-24%
 - 25-49%
 - 50-74%
 - 75-99%
 - Surcharged

- Notes:
- 1) There are no engineered SSO facilities within the Outfall Sewershed.
 - 2) Conduit Surcharge State is the model predicted maximum surcharge state for the simulated event.
 - 3) Year 2025 Conditions for OUT05 sewershed assumes that OUT05 is disconnected from the 99 inch Outfall sewer, and that OUT05 drains to Low Level without backwater conditions.



Project 1039
Outfall Collection System
Evaluation & Sewershed Plan



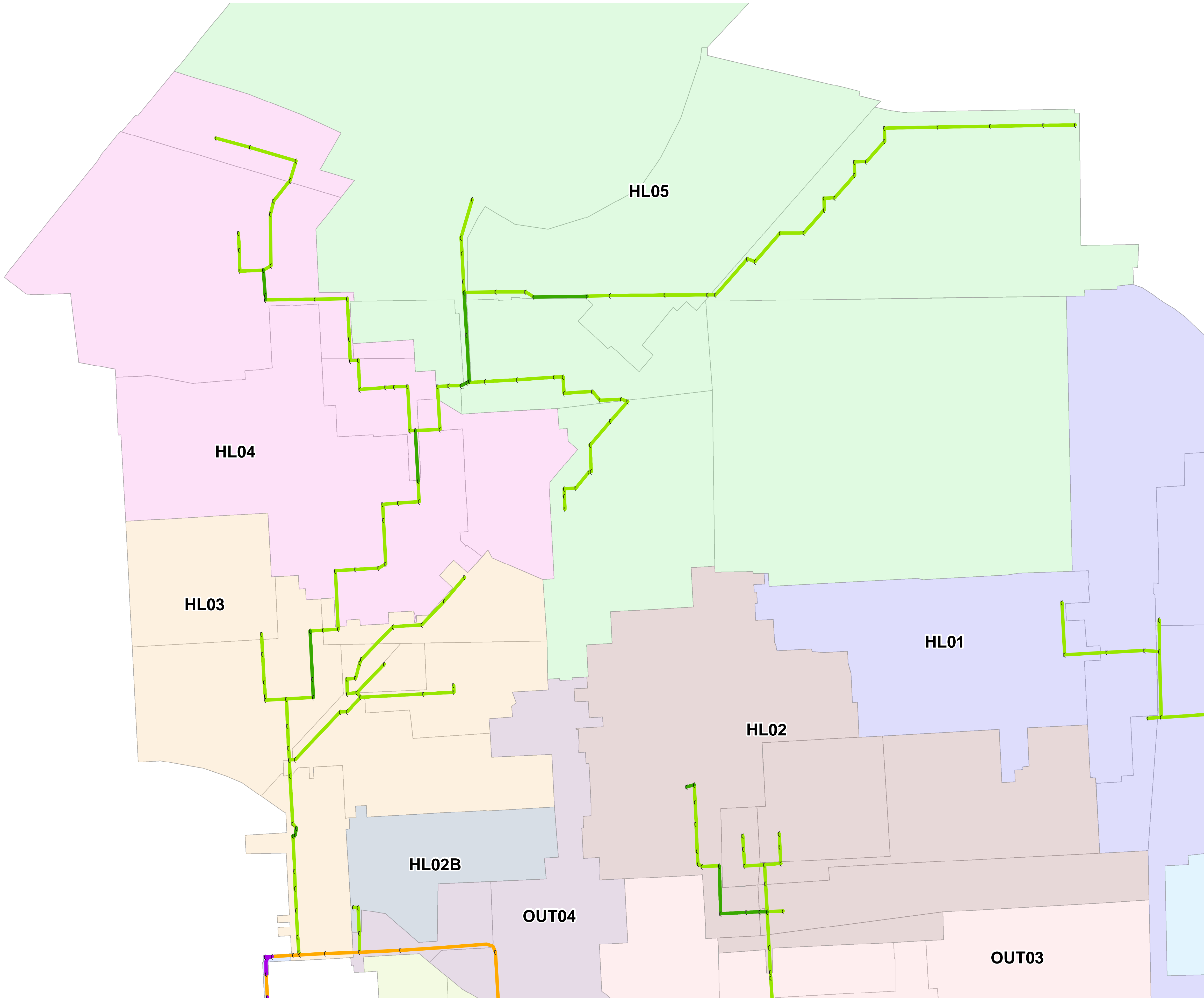
Outfall
Year 2025 Conditions
Dry Weather
Capacity Assessment
Active Boundary Conditions



BROWN AND CALDWELL

May 2009

Figure 5-2-1-A



Legend

Manhole Flooding State

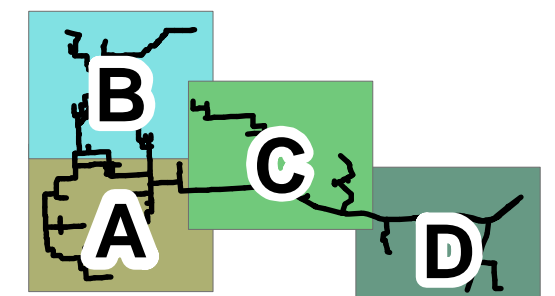
- Flooding
- No Flooding

Conduit Surcharge State

Pipe Percent Full

- 0-24%
- 25-49%
- 50-74%
- 75-99%
- Surcharged

- Notes:
- 1) There are no engineered SSO facilities within the Outfall Sewershed.
 - 2) Conduit Surcharge State is the model predicted maximum surcharge state for the simulated event.
 - 3) Year 2025 Conditions for OUT05 sewershed assumes that OUT05 is disconnected from the 99 inch Outfall sewer, and that OUT05 drains to Low Level without backwater conditions.



Dewberry

BROWN AND
CALDWELL

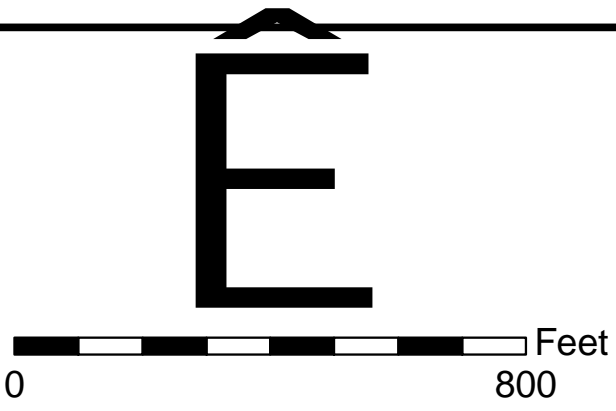
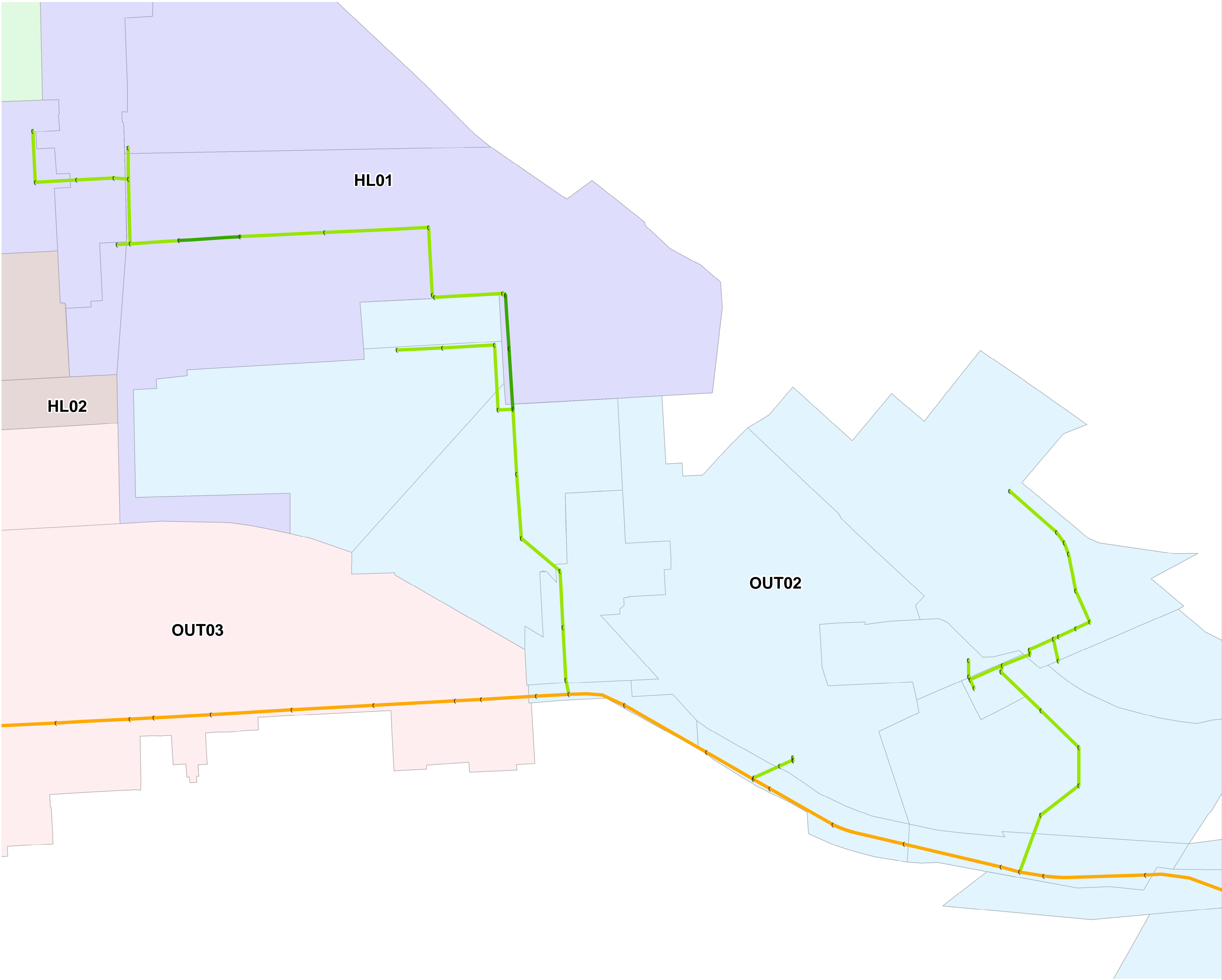
May 2009

Outfall
Year 2025 Conditions
Dry Weather
Capacity Assessment
Active Boundary Conditions

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan



Figure 5-2-1-B



Legend

Manhole Flooding State

- Flooding
- No Flooding

Conduit Surcharge State

Pipe Percent Full

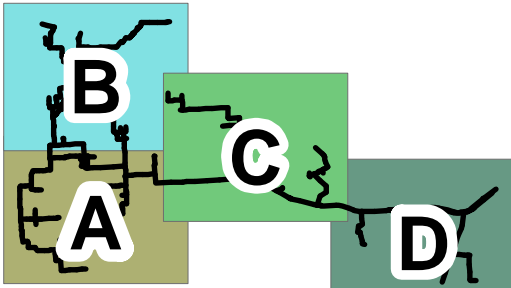
- 0-24%
- 25-49%
- 50-74%
- 75-99%
- Surcharged

Notes:

1) There are no engineered SSO facilities within the Outfall Sewershed.

2) Conduit Surcharge State is the model predicted maximum surcharge state for the simulated event.

3) Year 2025 Conditions for OUT05 sewershed assumes that OUT05 is disconnected from the 99 inch Outfall sewer, and that OUT05 drains to Low Level without backwater conditions.



Dewberry



BROWN AND CALDWELL

May 2009

Outfall
Year 2025 Conditions
Dry Weather
Capacity Assessment
Active Boundary Conditions

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan





Figure 5-2-1-C








Legend

Manhole Flooding State

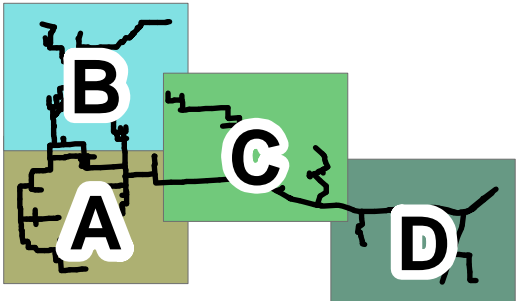
-  Flooding
-  No Flooding

Conduit Surcharge State

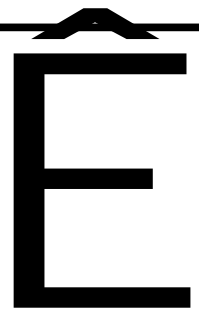
Pipe Percent Full

-  0-24%
-  25-49%
-  50-74%
-  75-99%
-  Surcharged

- Notes:
- 1) There are no engineered SSO facilities within the Outfall Sewershed.
 - 2) Conduit Surcharge State is the model predicted maximum surcharge state for the simulated event.
 - 3) Year 2025 Conditions for OUT05 sewershed assumes that OUT05 is disconnected from the 99 inch Outfall sewer, and that OUT05 drains to Low Level without backwater conditions.



0 800 Feet

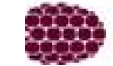


Project 1039 Outfall Collection System Evaluation & Sewershed Plan



Outfall
Year 2025 Conditions
Dry Weather
Capacity Assessment
Active Boundary Conditions

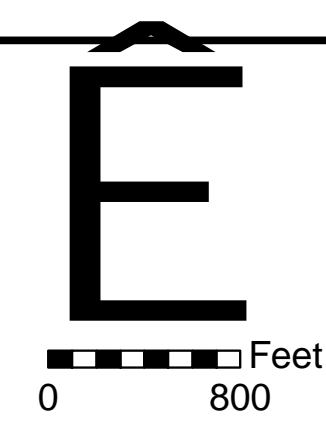
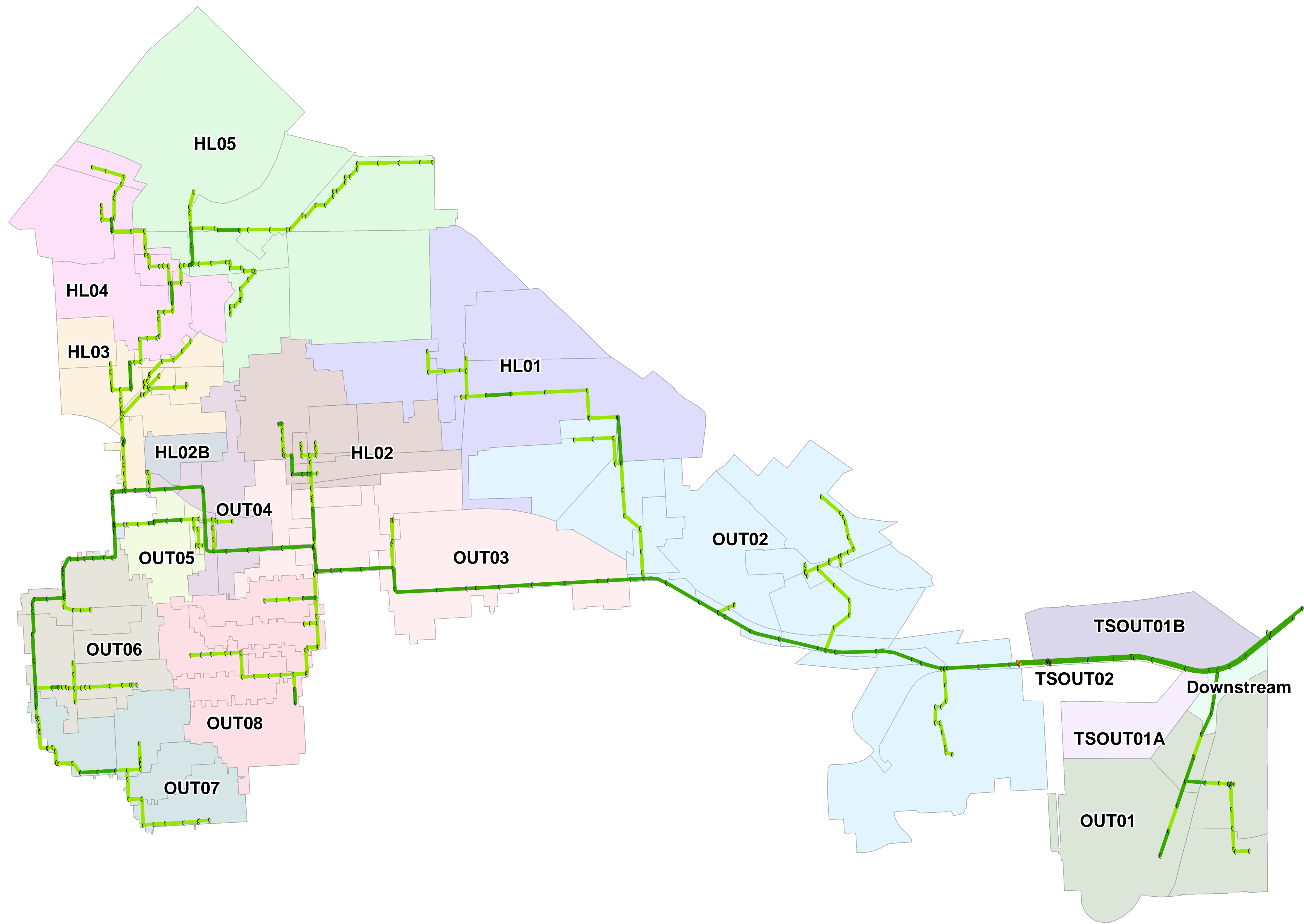
Dewberry



BROWN AND
CALDWELL

May 2009

Figure 5-2-1-D



Legend

Manhole Flooding State

- Flooding
- No Flooding

Conduit Surcharge State

Pipe Percent Full

- 0-24%
- 25-49%
- 50-74%
- 75-99%
- Surcharged

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.
2) Conduit Surcharge State is the model predicted maximum surcharge state for the simulated event.
3) Year 2025 Conditions for OUT05 sewershed assumes that OUT05 is disconnected from the 99 inch Outfall sewer, and that OUT05 drains to Low Level without backwater conditions.

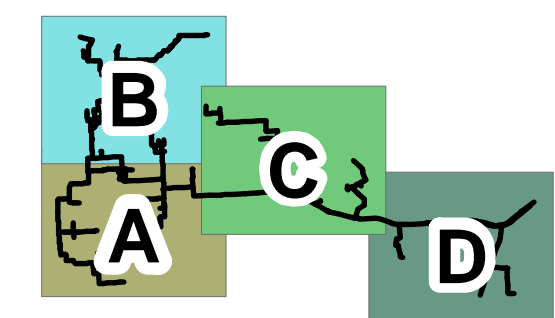
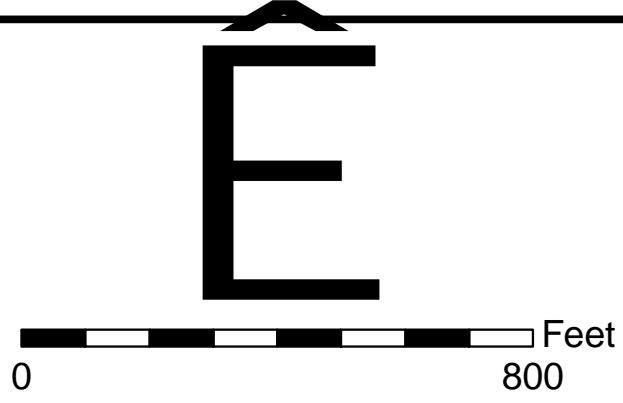
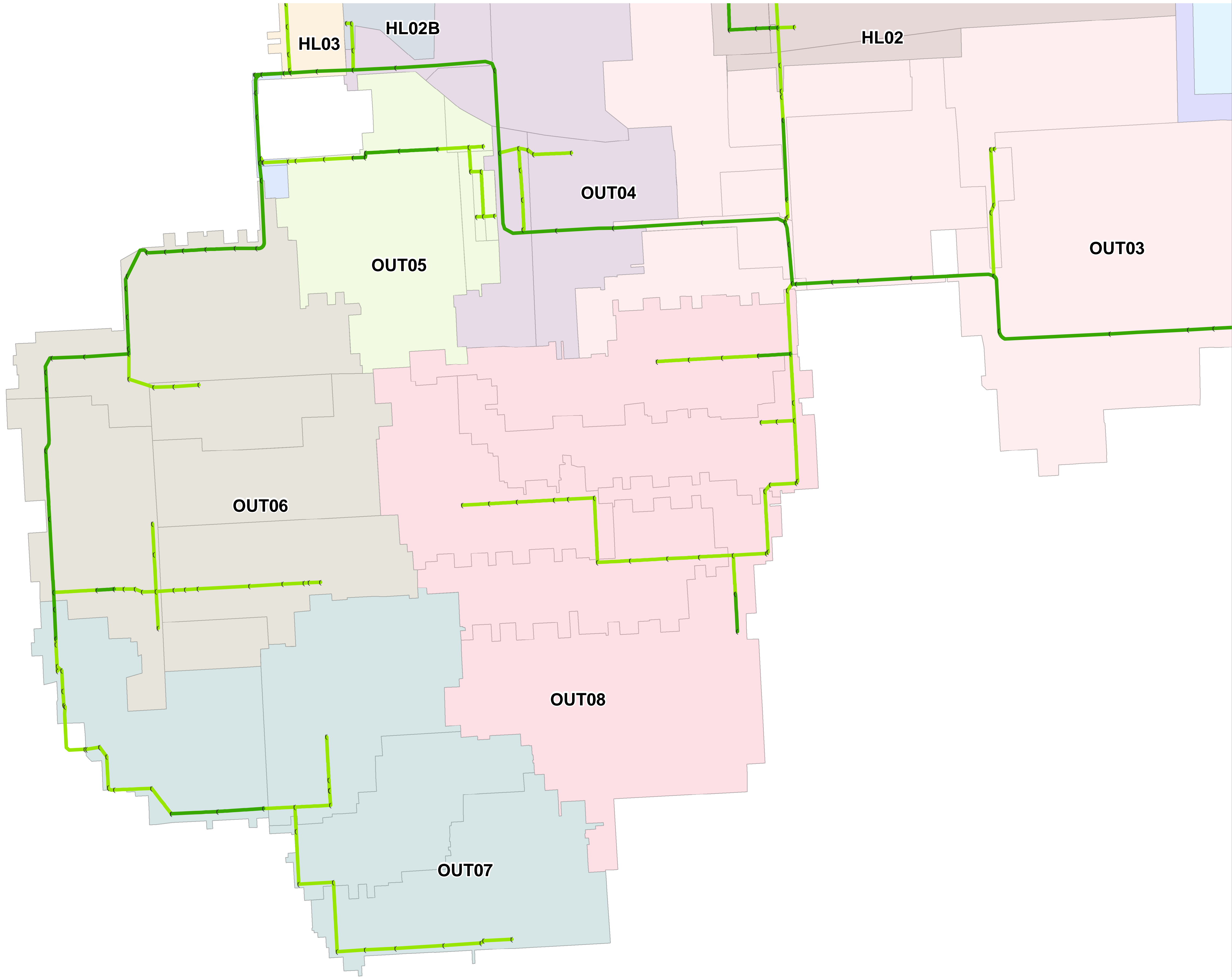


Figure 5-2-2



Legend

Manhole Flooding State

- () Flooding
- () No Flooding

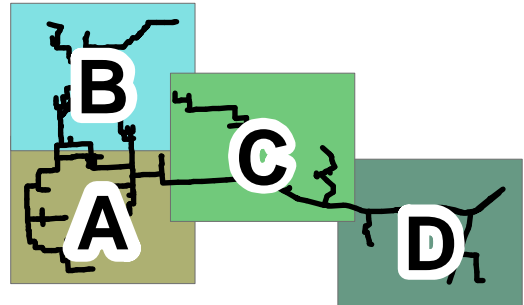
Conduit Surcharge State

Pipe Percent Full

- 0-24%
- 25-49%
- 50-74%
- 75-99%
- Surcharged

Notes:

- 1) There are no engineered SSO facilities within the Outfall Sewershed.
- 2) Conduit Surcharge State is the model predicted maximum surcharge state for the simulated event.
- 3) Year 2025 Conditions for OUT05 sewershed assumes that OUT05 is disconnected from the 99 inch Outfall sewer, and that OUT05 drains to Low Level without backwater conditions.



Dewberry



**BROWN AND
CALDWELL**

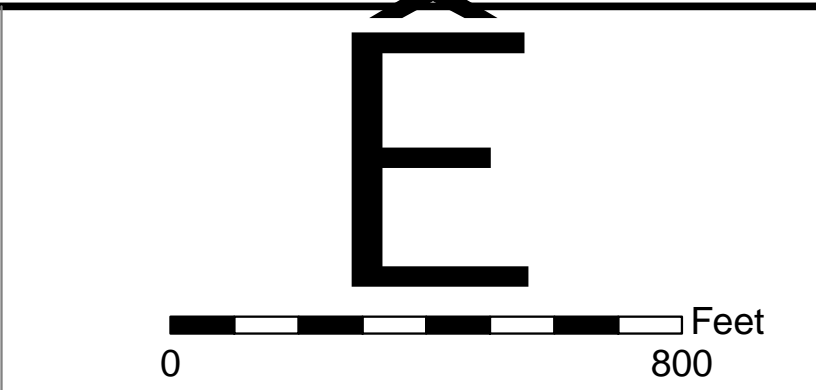
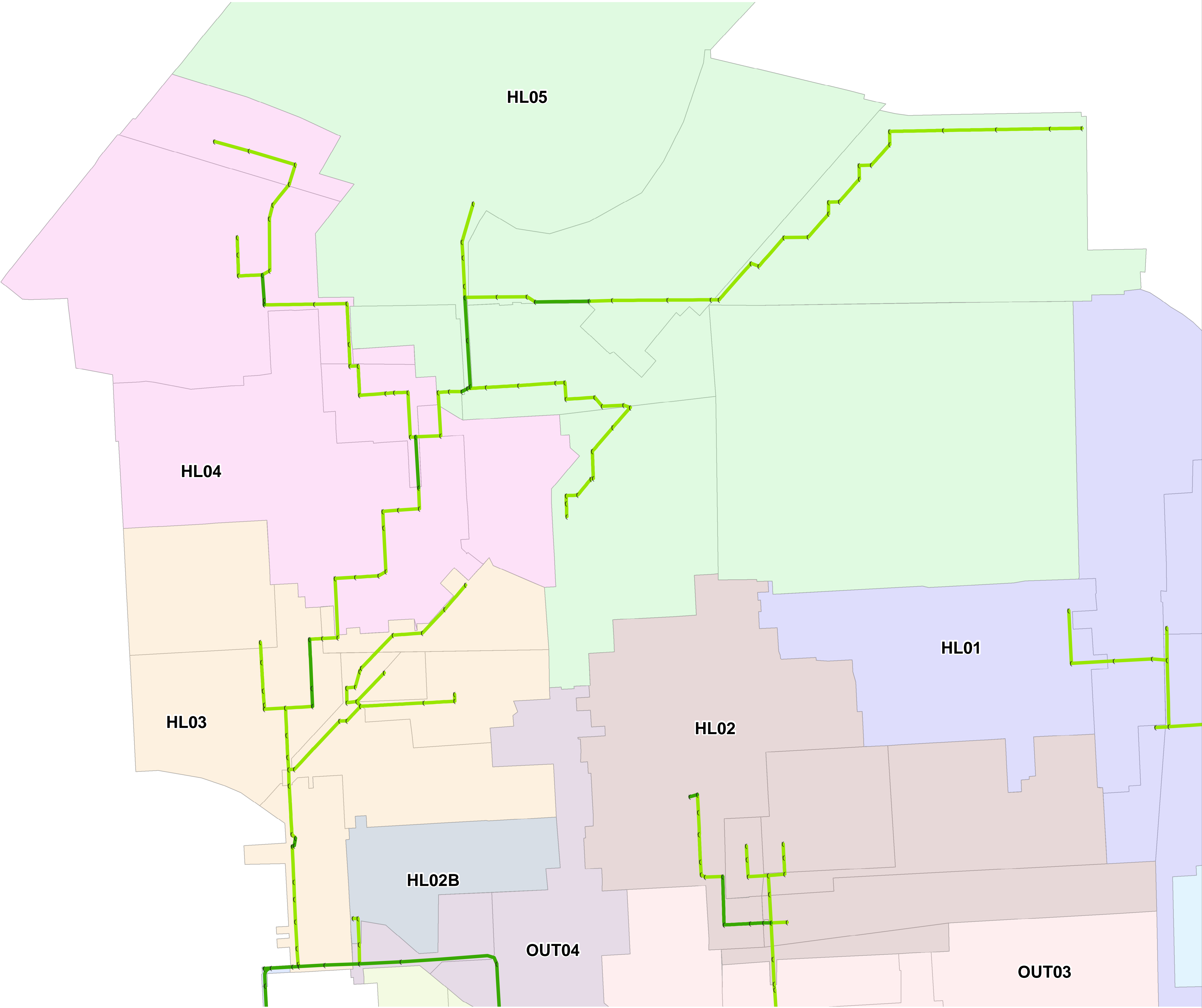
May 2009

Outfall
Year 2025 Conditions
Dry Weather
Capacity Assessment
Inactive Boundary Conditions

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan



Figure 5-2-2-A



Legend

Manhole Flooding State

- (Red arrow) Flooding
- (Black arrow) No Flooding

Conduit Surcharge State

Pipe Percent Full

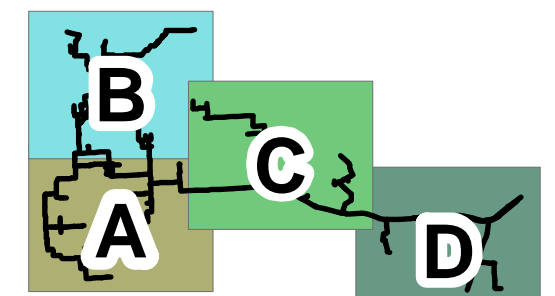
- Light green line 0-24%
- Dark green line 25-49%
- Orange line 50-74%
- Purple line 75-99%
- Red line Surcharged

Notes:

1) There are no engineered SSO facilities within the Outfall Sewershed.

2) Conduit Surcharge State is the model predicted maximum surcharge state for the simulated event.

3) Year 2025 Conditions for OUT05 sewershed assumes that OUT05 is disconnected from the 99 inch Outfall sewer, and that OUT05 drains to Low Level without backwater conditions.



BROWN AND
CALDWELL

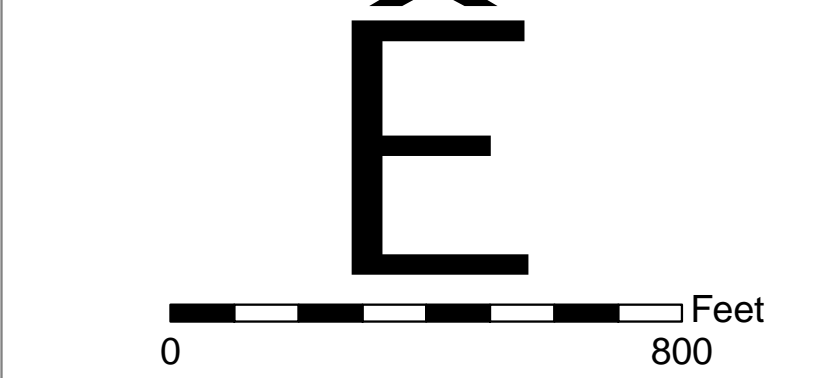
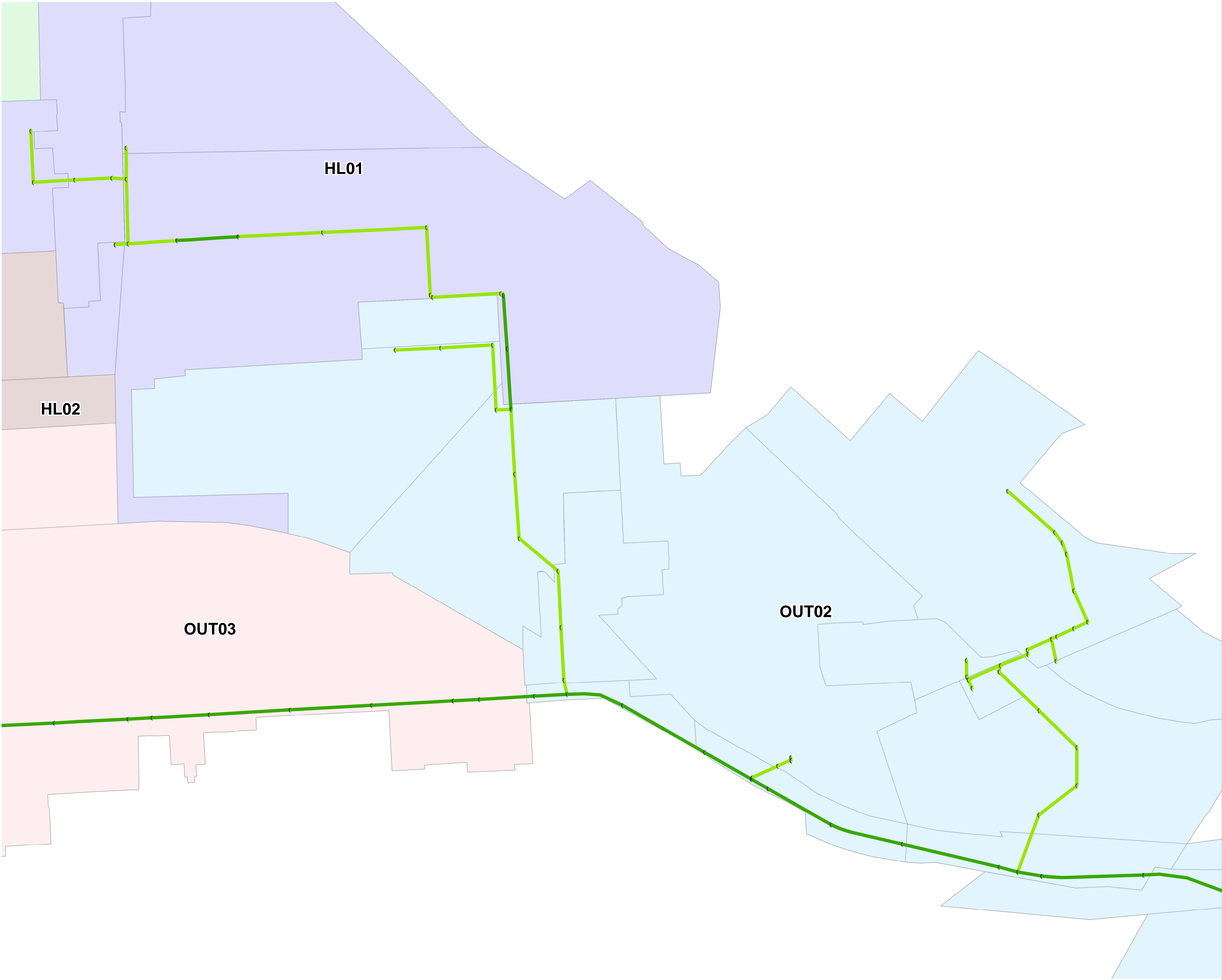
May 2009

Outfall
Year 2025 Conditions
Dry Weather
Capacity Assessment
Inactive Boundary Conditions

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan





Figure 5-2-2-B








Legend

Manhole Flooding State

-  Flooding
-  No Flooding

Conduit Surcharge State

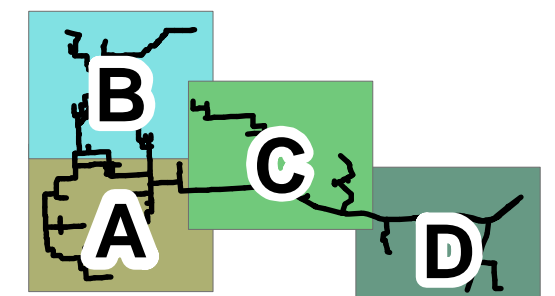
- Pipe Percent Full
-  0-24%
 -  25-49%
 -  50-74%
 -  75-99%
 -  Surcharged

Notes:

1) There are no engineered SSO facilities within the Outfall Sewershed.

2) Conduit Surcharge State is the model predicted maximum surcharge state for the simulated event.

3) Year 2025 Conditions for OUT05 sewershed assumes that OUT05 is disconnected from the 99 inch Outfall sewer, and that OUT05 drains to Low Level without backwater conditions.



Dewberry

BROWN AND
CALDWELL

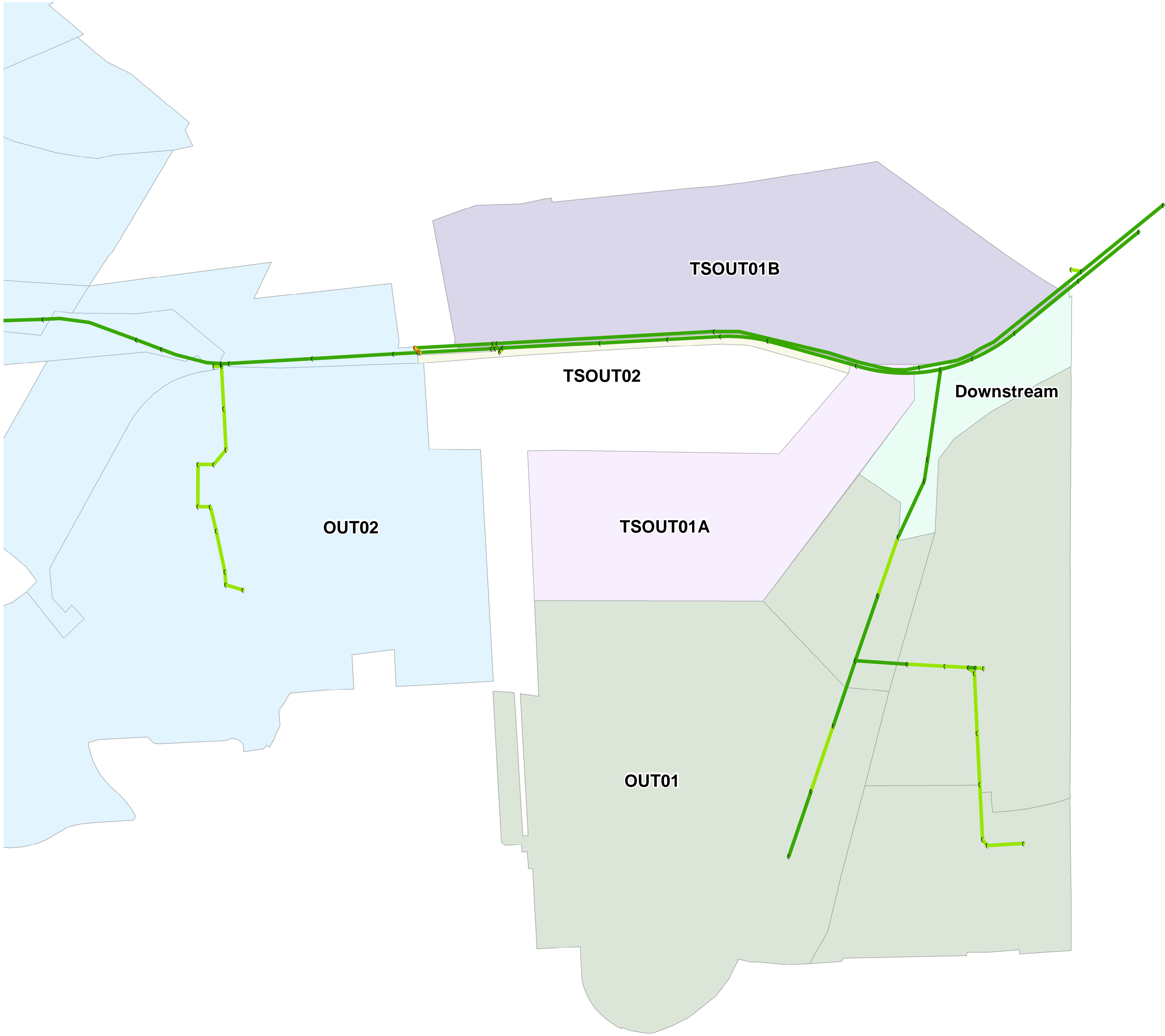
May 2009

Outfall
Year 2025 Conditions
Dry Weather
Capacity Assessment
Inactive Boundary Conditions

Project 1039 Outfall Collection System Evaluation & Sewershed Plan





Figure 5-2-2-C








Legend

Manhole Flooding State

-  Flooding
-  No Flooding

Conduit Surge State

Pipe Percent Full

-  0-24%
-  25-49%
-  50-74%
-  75-99%
-  Surcharged

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.
2) Conduit Surge State is the model predicted maximum surcharge state for the simulated event.
3) Year 2025 Conditions for OUT05 sewershed assumes that OUT05 is disconnected from the 99 inch Outfall sewer, and that OUT05 drains to Low Level without backwater conditions.

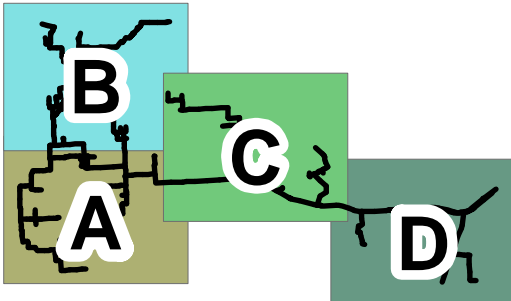
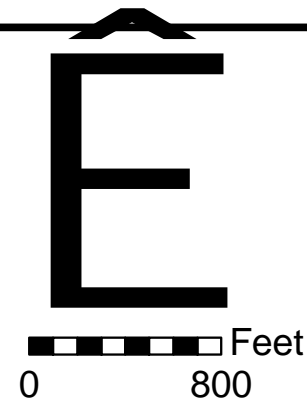
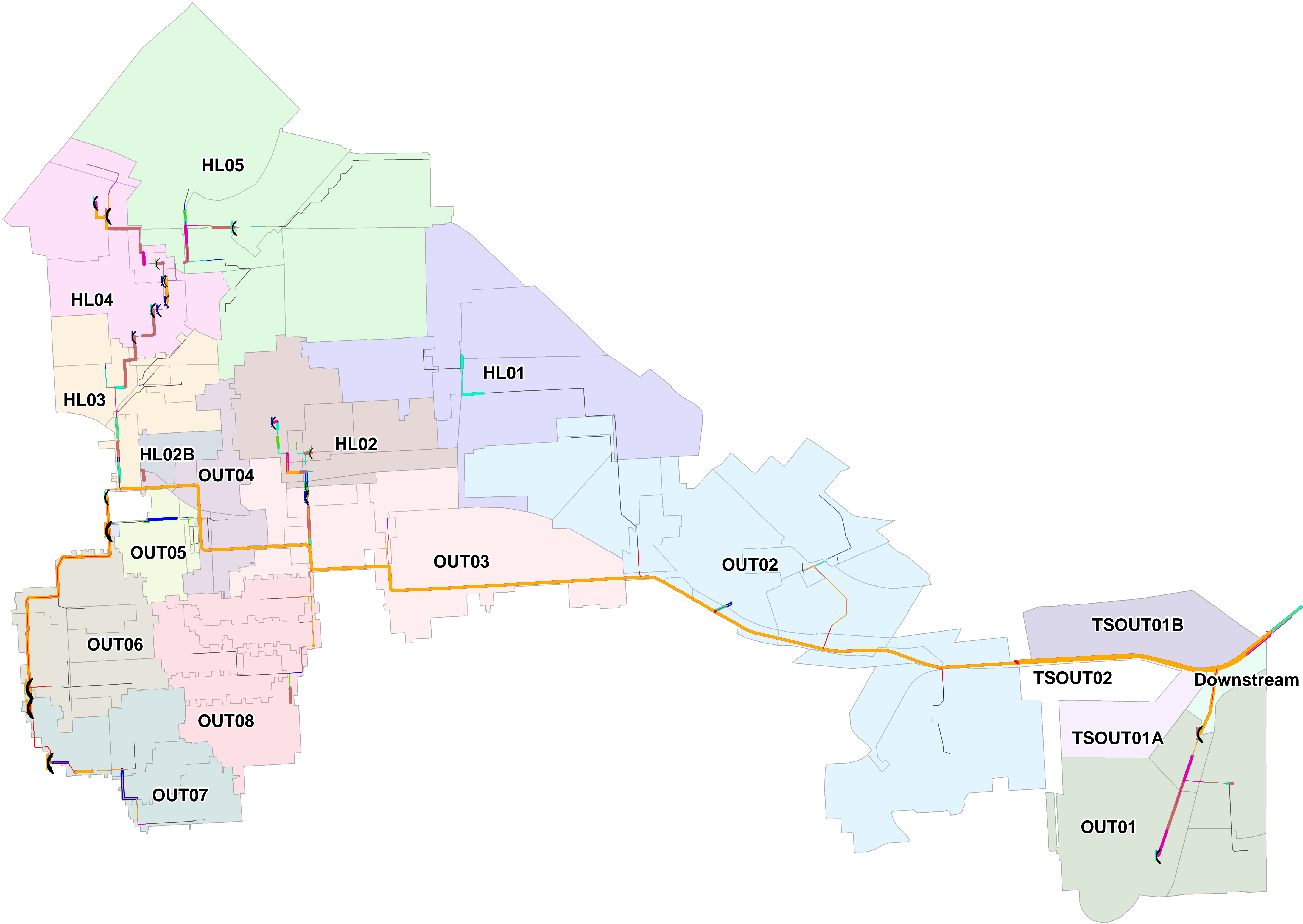


Figure 5-2-2-D



Legend

Manhole Flooding RPA

- 3-Month 1-Hour Storm
- 1-Year 24-Hour Storm
- 2-Year 24-Hour Storm
- 5-Year 24-Hour Storm
- 10-Year 24-Hour Storm
- 15-Year 24-Hour Storm
- 20-Year 24-Hour Storm

Pipe Surcharge RPA

- 3-Month 1-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 1-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 2-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 5-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 10-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 15-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 20-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- <= 20-Year 24-Hour Storm**
 - No Surcharge

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.
2) Year 2025 Conditions for OUT05 sewershed assumes that OUT05 is disconnected from the 99 inch Outfall sewer, and that OUT05 drains to Low Level without backwater conditions.

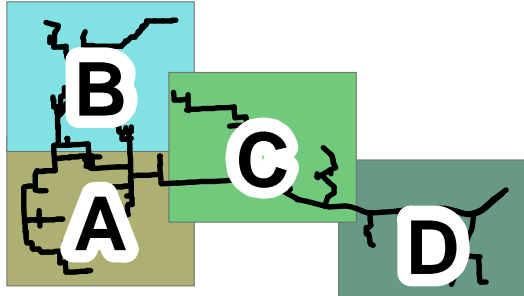
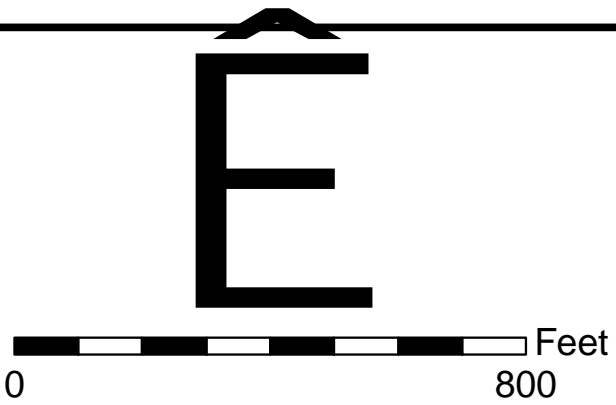
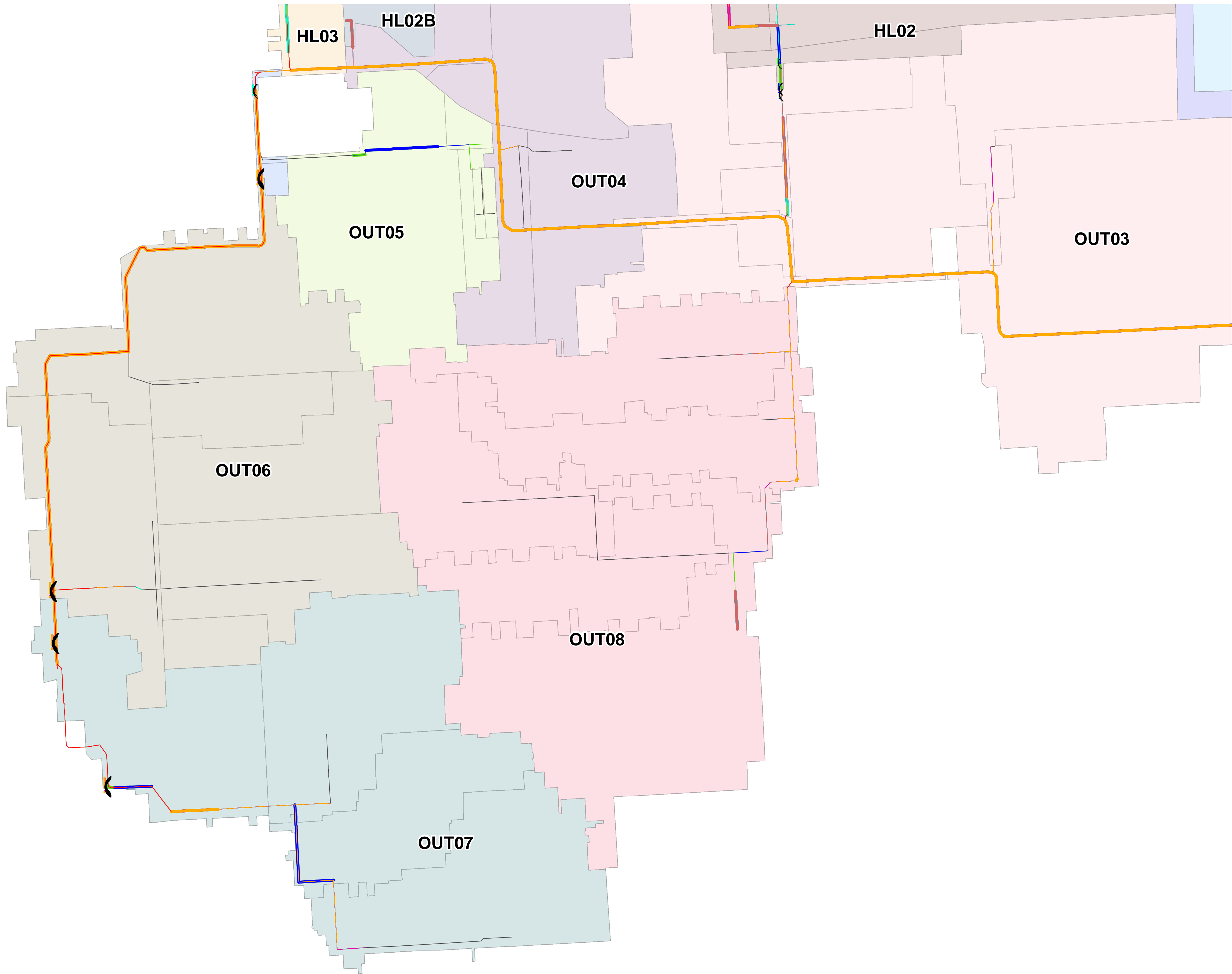


Figure 5-3-1



Legend

Manhole Flooding RPA

- 3-Month 1-Hour Storm
- 1-Year 24-Hour Storm
- 2-Year 24-Hour Storm
- 5-Year 24-Hour Storm
- 10-Year 24-Hour Storm
- 15-Year 24-Hour Storm
- 20-Year 24-Hour Storm

Pipe Surcharge RPA

- 3-Month 1-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 1-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 2-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 5-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 10-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 15-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 20-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- <= 20-Year 24-Hour Storm**
 - No Surcharge

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.

2) Year 2025 Conditions for OUT05 sewershed assumes that OUT05 is disconnected from the 99 inch Outfall sewer, and that OUT05 drains to Low Level without backwater conditions.

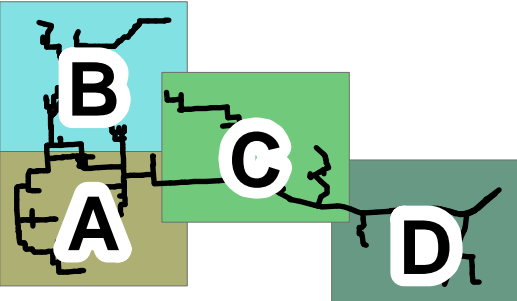
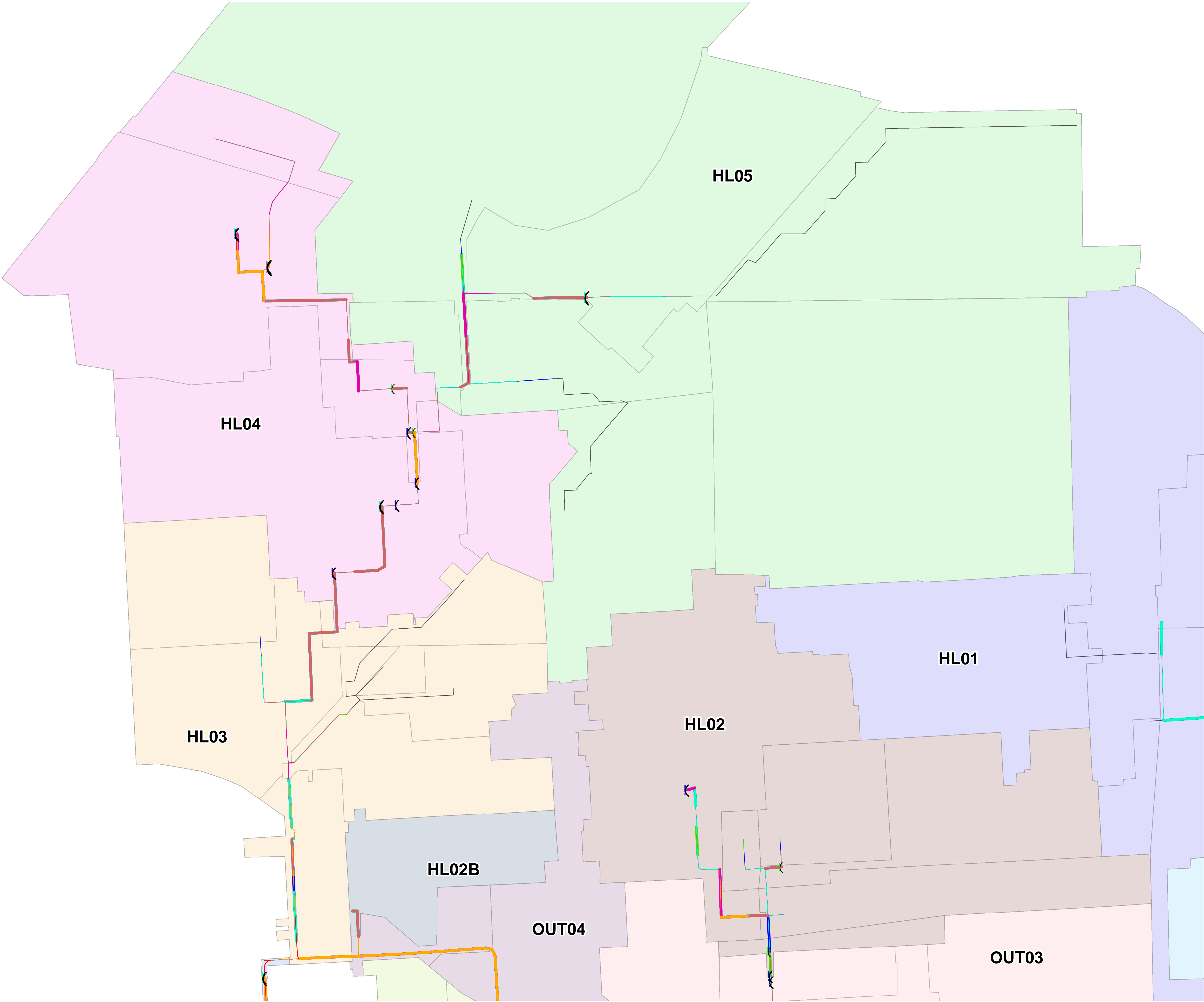


Figure 5-3-1-A



Legend

Manhole Flooding RPA

- 3-Month 1-Hour Storm
- 1-Year 24-Hour Storm
- 2-Year 24-Hour Storm
- 5-Year 24-Hour Storm
- 10-Year 24-Hour Storm
- 15-Year 24-Hour Storm
- 20-Year 24-Hour Storm

Pipe Surcharge RPA

3-Month 1-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

1-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

2-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

5-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

10-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

15-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

20-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

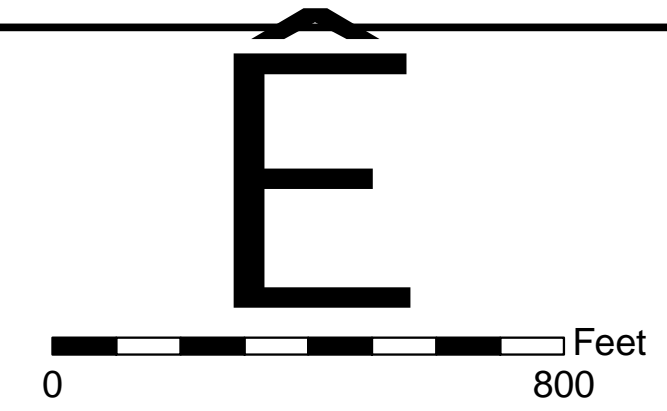
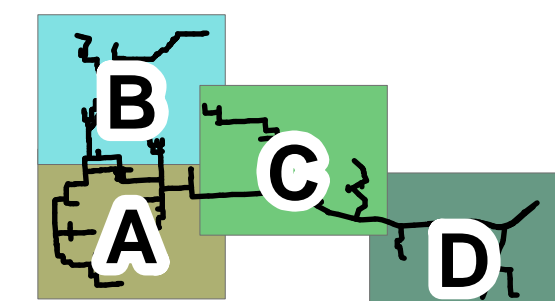
<= 20-Year 24-Hour Storm

- No Surcharge

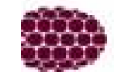
Notes:

1) There are no engineered SSO facilities within the Outfall Sewershed.

2) Year 2025 Conditions for OUT05 sewershed assumes that OUT05 is disconnected from the 99 inch Outfall sewer, and that OUT05 drains to Low Level without backwater conditions.



Dewberry



BROWN AND CALDWELL

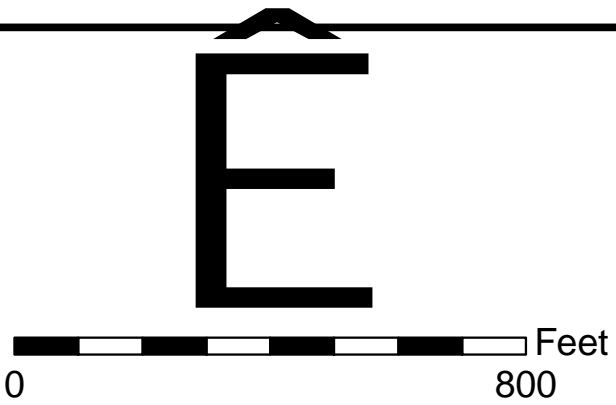
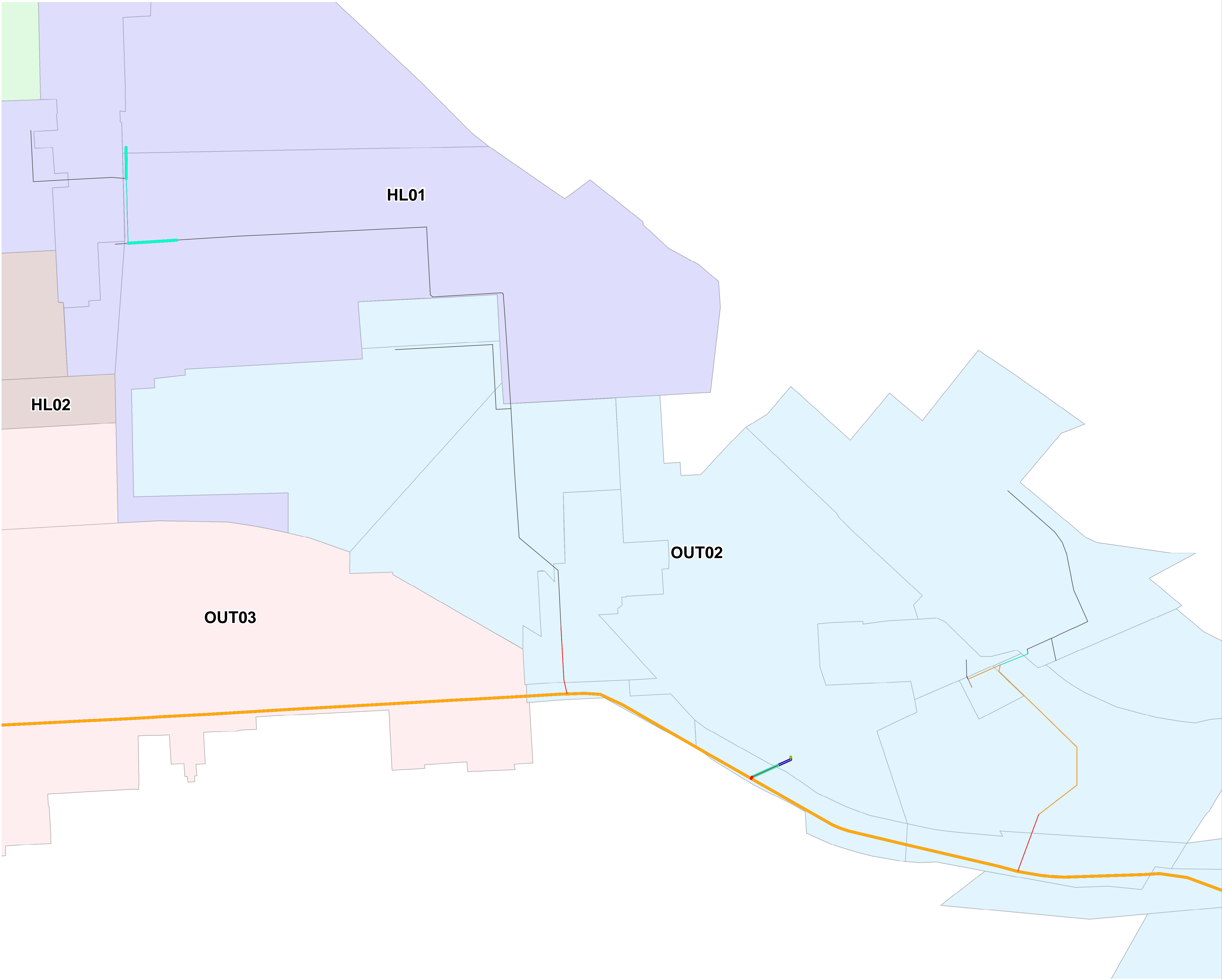
May 2009

Outfall
Year 2025 Conditions
Hydraulic Restriction
Return Period Analysis
Active Boundary Conditions

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan



Figure 5-3-1-B



Legend

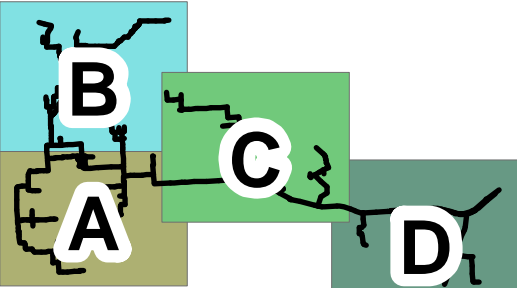
- Manhole Flooding RPA**
- 3-Month 1-Hour Storm
 - 1-Year 24-Hour Storm
 - 2-Year 24-Hour Storm
 - 5-Year 24-Hour Storm
 - 10-Year 24-Hour Storm
 - 15-Year 24-Hour Storm
 - 20-Year 24-Hour Storm

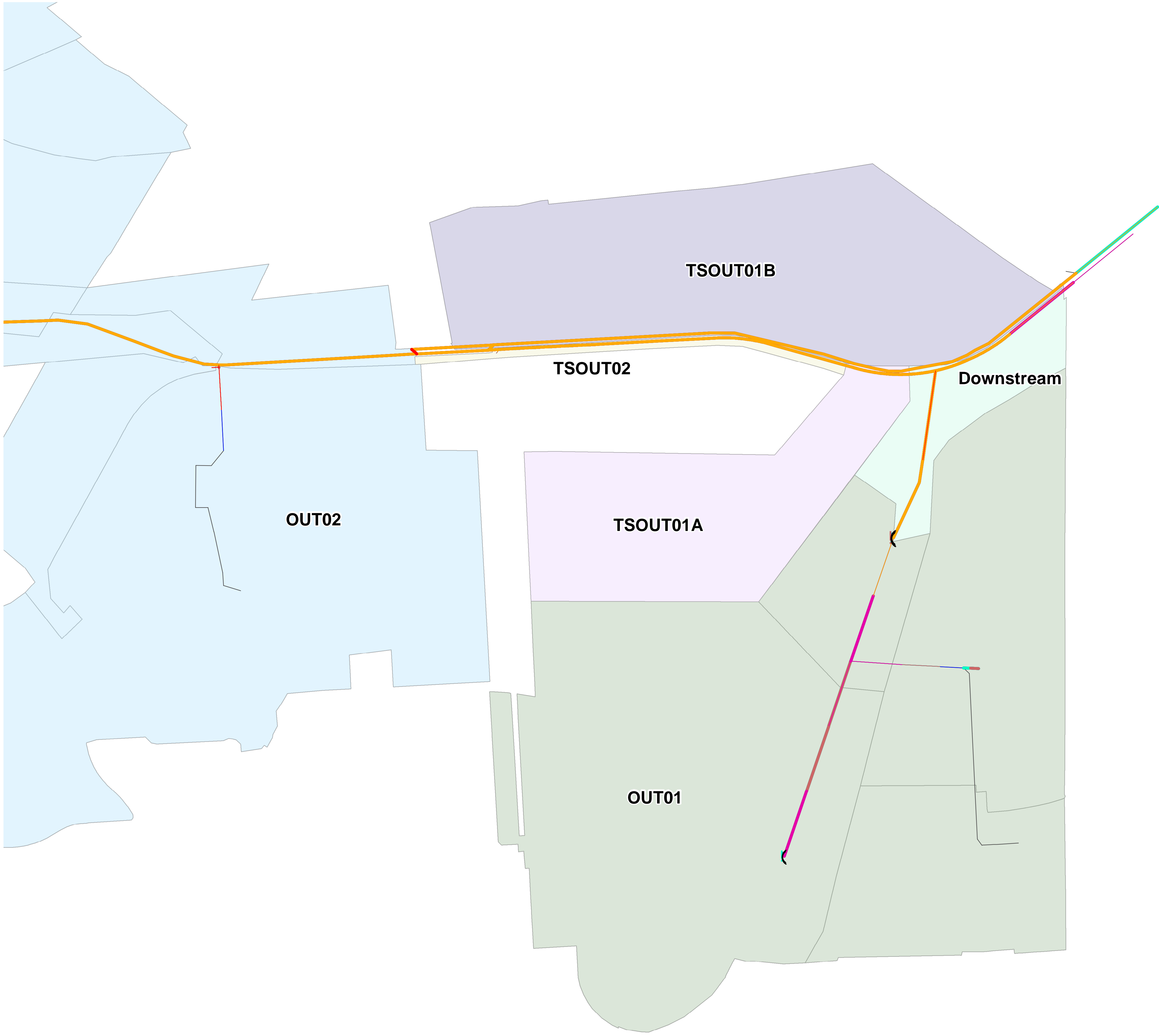
- Pipe Surcharge RPA**
- 3-Month 1-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 1-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 2-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 5-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 10-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 15-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 20-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- <= 20-Year 24-Hour Storm**
- No Surcharge

Notes:

1) There are no engineered SSO facilities within the Outfall Sewershed.

2) Year 2025 Conditions for OUT05 sewershed assumes that OUT05 is disconnected from the 99 inch Outfall sewer, and that OUT05 drains to Low Level without backwater conditions.





Legend

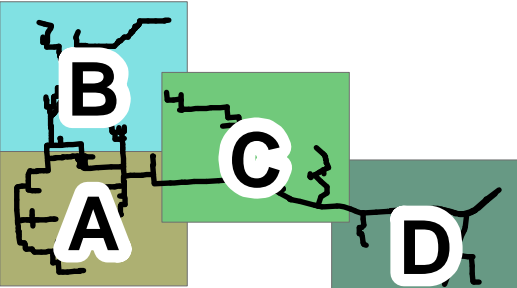
- Manhole Flooding RPA**
- 3-Month 1-Hour Storm
 - 1-Year 24-Hour Storm
 - 2-Year 24-Hour Storm
 - 5-Year 24-Hour Storm
 - 10-Year 24-Hour Storm
 - 15-Year 24-Hour Storm
 - 20-Year 24-Hour Storm

- Pipe Surcharge RPA**
- 3-Month 1-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 1-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 2-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 5-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 10-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 15-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 20-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- <= 20-Year 24-Hour Storm**
- No Surcharge

Notes:

1) There are no engineered SSO facilities within the Outfall Sewershed.

2) Year 2025 Conditions for OUT05 sewershed assumes that OUT05 is disconnected from the 99 inch Outfall sewer, and that OUT05 drains to Low Level without backwater conditions.



0 800 Feet

Dewberry

BROWN AND
CALDWELL

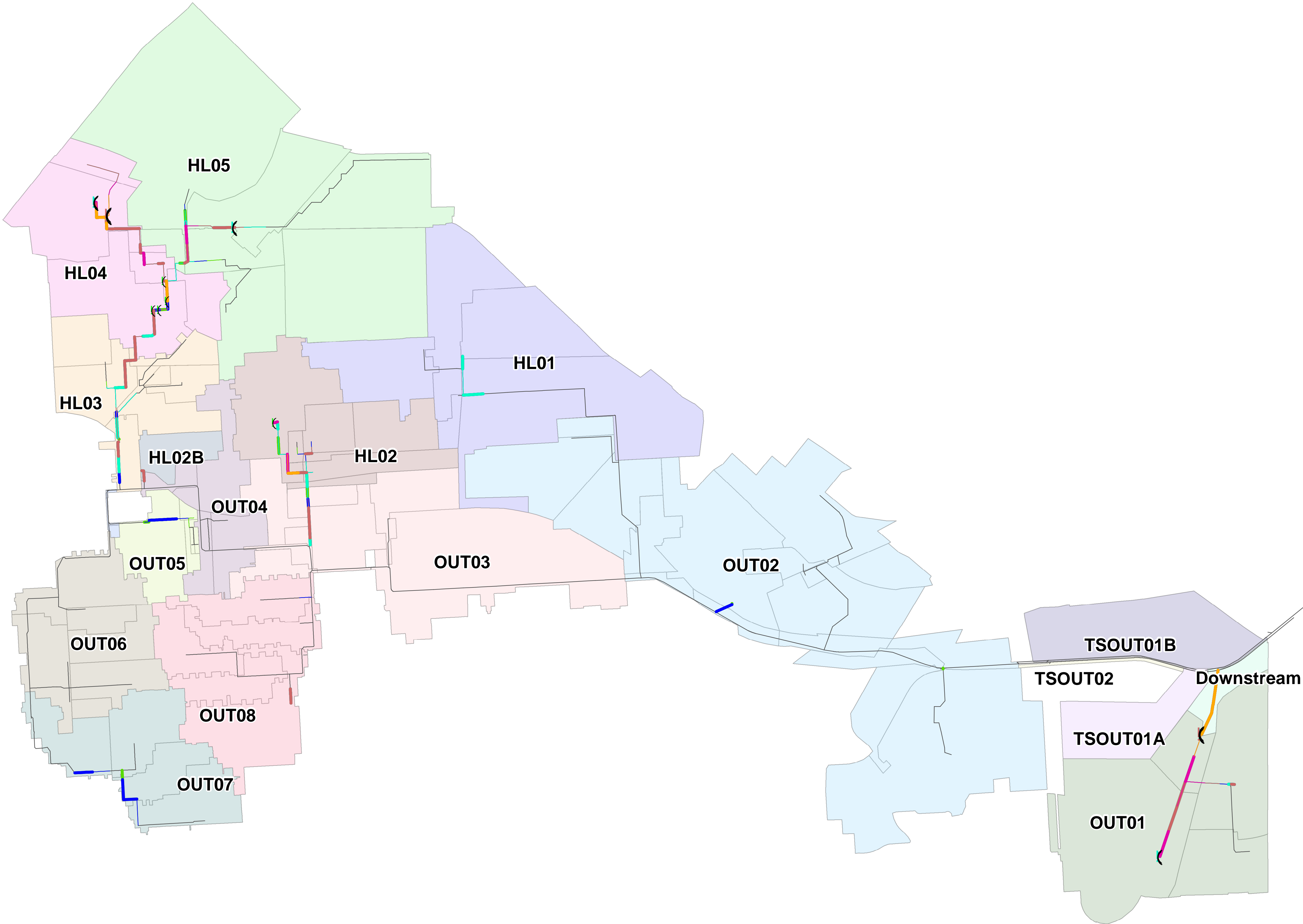
May 2009

Outfall
Year 2025 Conditions
Hydraulic Restriction
Return Period Analysis
Active Boundary Conditions

Project 1039
Outfall Collection System
Evaluation & Sewershed Plan



Figure 5-3-1-D



Legend

Manhole Flooding RPA

- 3-Month 1-Hour Storm
- 1-Year 24-Hour Storm
- 2-Year 24-Hour Storm
- 5-Year 24-Hour Storm
- 10-Year 24-Hour Storm
- 15-Year 24-Hour Storm
- 20-Year 24-Hour Storm

Pipe Surcharge RPA

- 3-Month 1-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 1-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 2-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 5-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 10-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 15-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 20-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- <= 20-Year 24-Hour Storm**
 - No Surcharge

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.

2) Year 2025 Conditions for OUT05 sewershed assumes that OUT05 is disconnected from the 99 inch Outfall sewer, and that OUT05 drains to Low Level without backwater conditions.

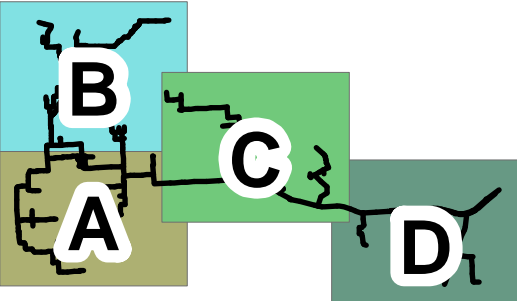
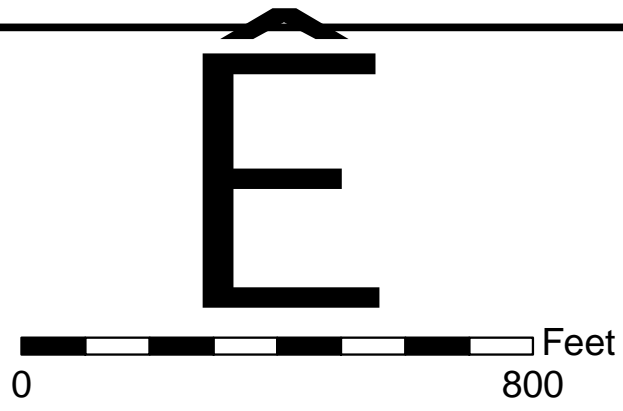
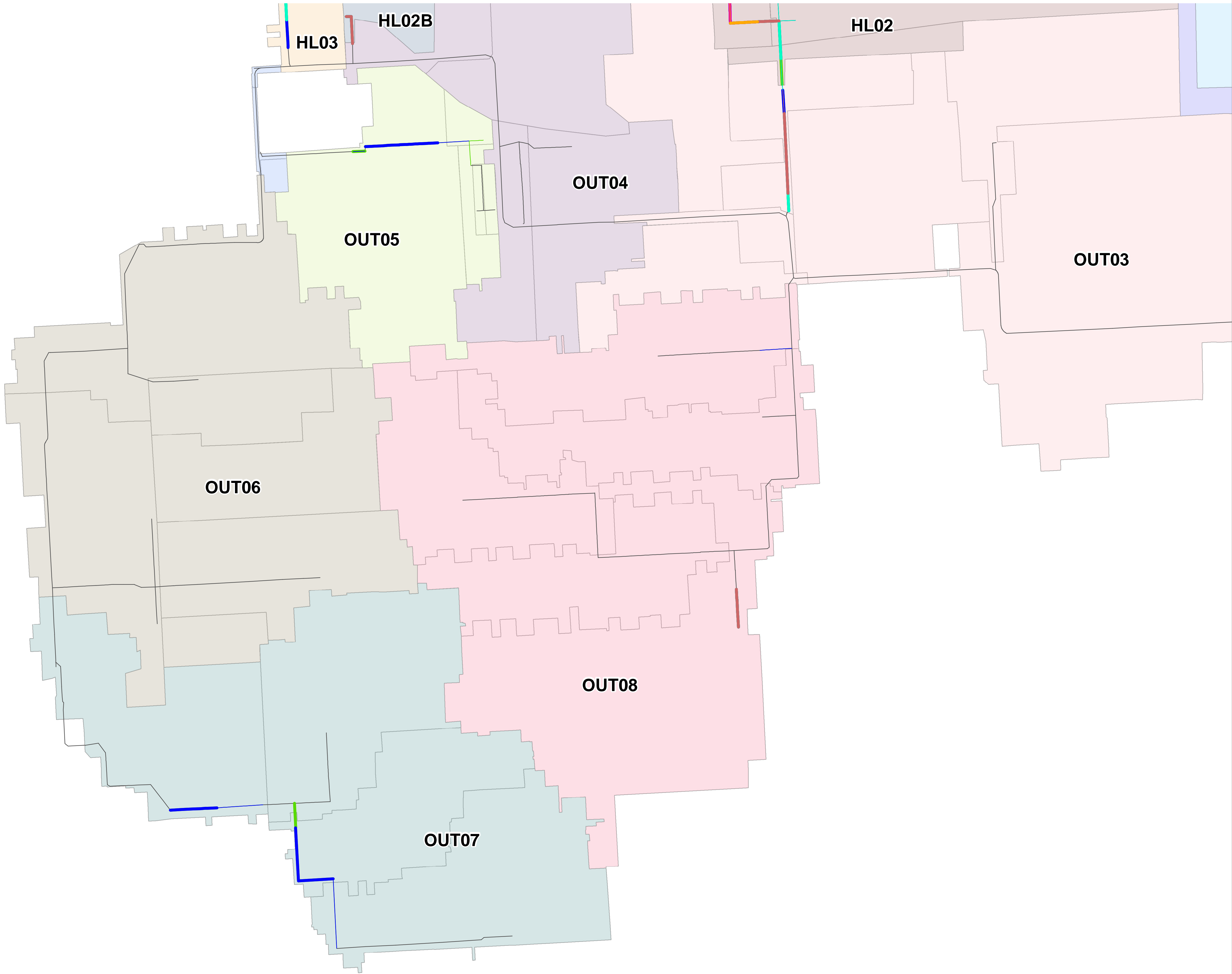


Figure 5-3-2



Legend

Manhole Flooding RPA

- 3-Month 1-Hour Storm
- 1-Year 24-Hour Storm
- 2-Year 24-Hour Storm
- 5-Year 24-Hour Storm
- 10-Year 24-Hour Storm
- 15-Year 24-Hour Storm
- 20-Year 24-Hour Storm

Pipe Surcharge RPA

- 3-Month 1-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 1-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 2-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 5-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 10-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 15-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- 20-Year 24-Hour Storm**
 - Surcharged Hyd. Restriction
 - Surcharged
- <= 20-Year 24-Hour Storm**
 - No Surcharge

Notes:
1) There are no engineered SSO facilities within the Outfall Sewershed.

2) Year 2025 Conditions for OUT05 sewershed assumes that OUT05 is disconnected from the 99 inch Outfall sewer, and that OUT05 drains to Low Level without backwater conditions.

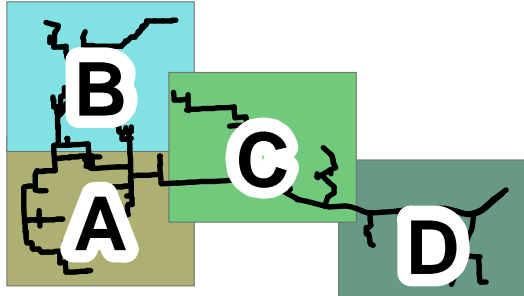
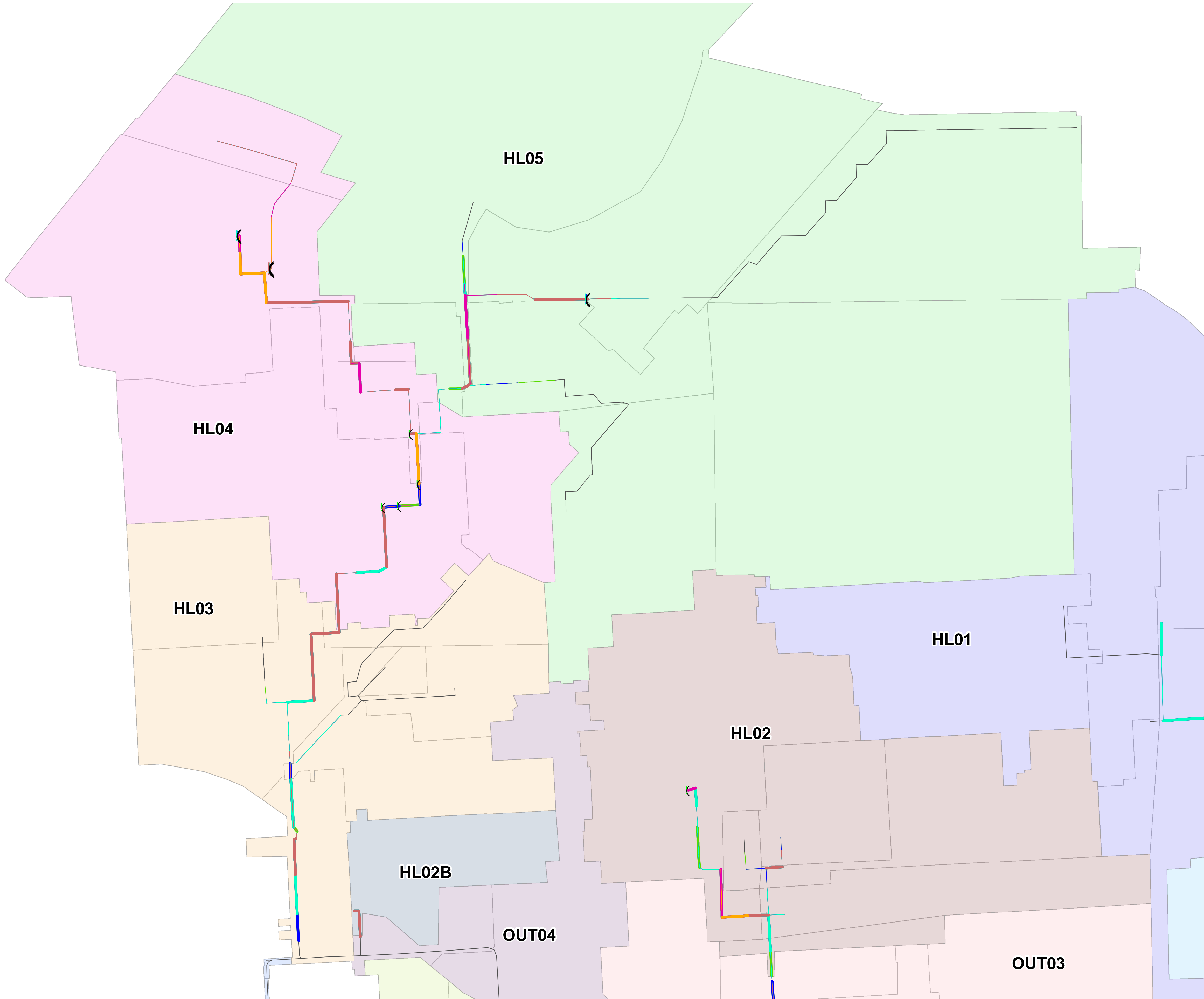


Figure 5-3-2-A



Legend

Manhole Flooding RPA

- 3-Month 1-Hour Storm
- 1-Year 24-Hour Storm
- 2-Year 24-Hour Storm
- 5-Year 24-Hour Storm
- 10-Year 24-Hour Storm
- 15-Year 24-Hour Storm
- 20-Year 24-Hour Storm

Pipe Surcharge RPA

3-Month 1-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

1-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

2-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

5-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

10-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

15-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

20-Year 24-Hour Storm

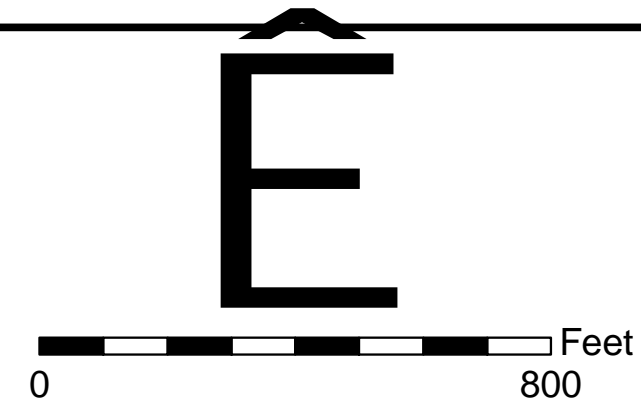
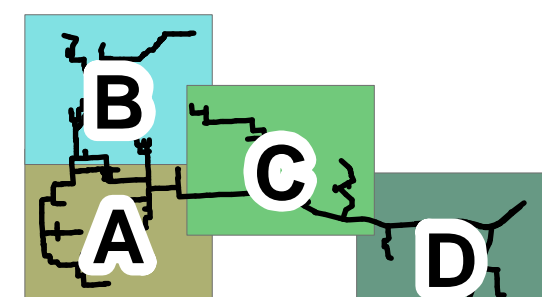
- Surcharged Hyd. Restriction
- Surcharged

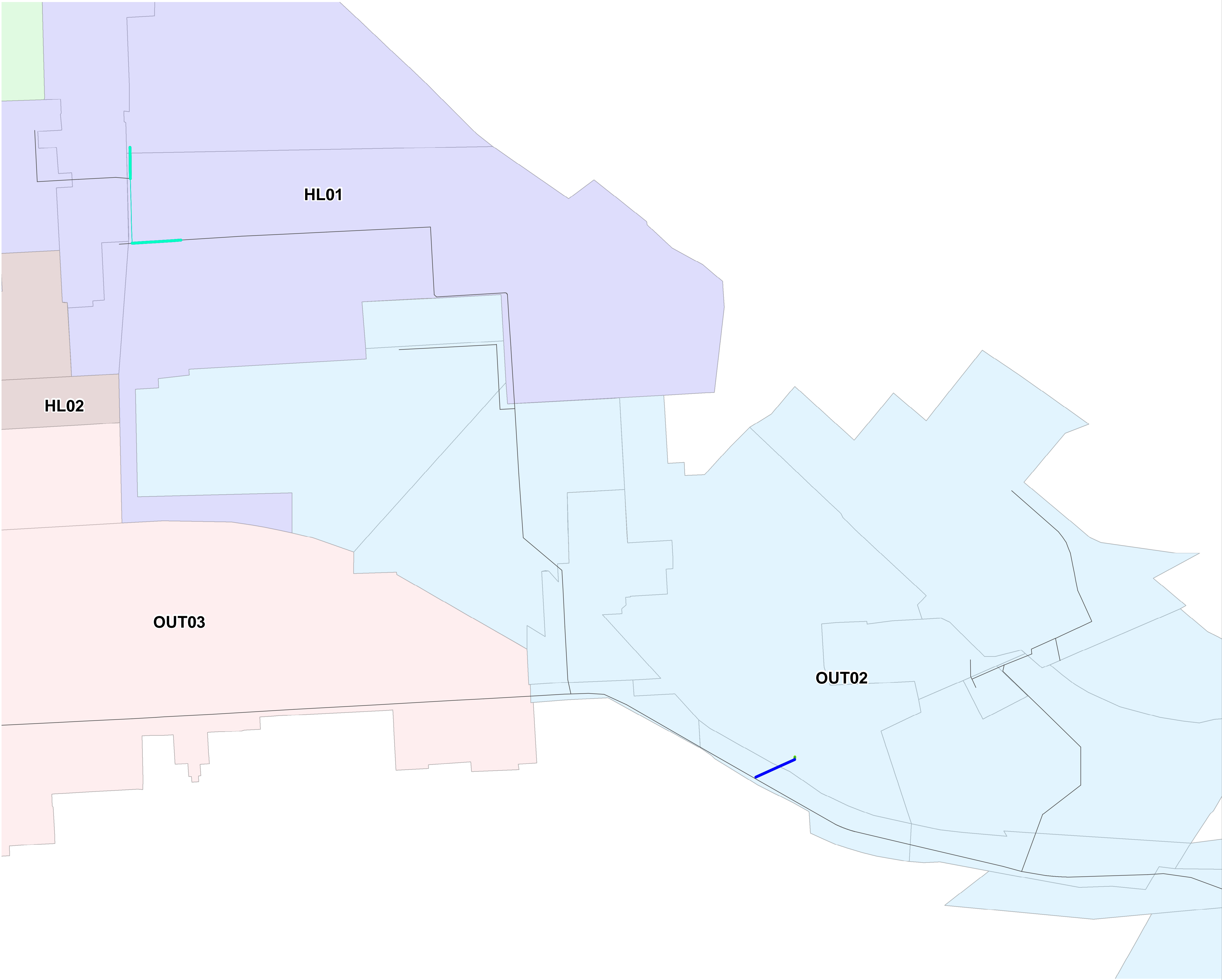
<= 20-Year 24-Hour Storm

- No Surcharge

Notes:

- 1) There are no engineered SSO facilities within the Outfall Sewershed.
- 2) Year 2025 Conditions for OUT05 sewershed assumes that OUT05 is disconnected from the 99 inch Outfall sewer, and that OUT05 drains to Low Level without backwater conditions.





Legend

Manhole Flooding RPA

- 3-Month 1-Hour Storm
- 1-Year 24-Hour Storm
- 2-Year 24-Hour Storm
- 5-Year 24-Hour Storm
- 10-Year 24-Hour Storm
- 15-Year 24-Hour Storm
- 20-Year 24-Hour Storm

Pipe Surcharge RPA

3-Month 1-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

1-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

2-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

5-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

10-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

15-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

20-Year 24-Hour Storm

- Surcharged Hyd. Restriction
- Surcharged

<= 20-Year 24-Hour Storm

- No Surcharge

Notes:

1) There are no engineered SSO facilities within the Outfall Sewershed.

2) Year 2025 Conditions for OUT05 sewershed assumes that OUT05 is disconnected from the 99 inch Outfall sewer, and that OUT05 drains to Low Level without backwater conditions.

May 2009

Outfall

Year 2025 Conditions

Hydraulic Restriction

Return Period Analysis

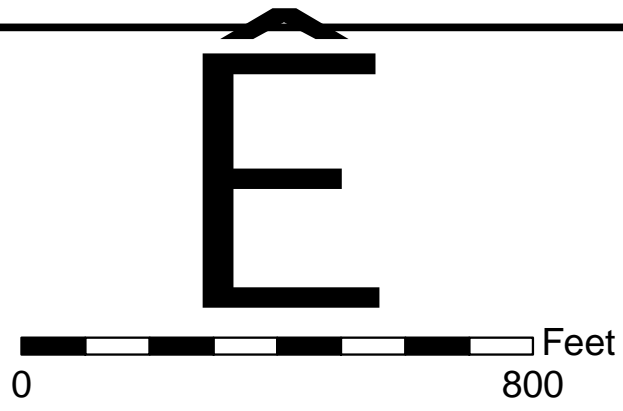
Inactive Boundary Conditions

Project 1039

Outfall Collection System

Evaluation & Sewershed Plan

Figure 5-3-2-C



Legend

- Manhole Flooding RPA**
- 3-Month 1-Hour Storm
 - 1-Year 24-Hour Storm
 - 2-Year 24-Hour Storm
 - 5-Year 24-Hour Storm
 - 10-Year 24-Hour Storm
 - 15-Year 24-Hour Storm
 - 20-Year 24-Hour Storm

- Pipe Surcharge RPA**
- 3-Month 1-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 1-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 2-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 5-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 10-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 15-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- 20-Year 24-Hour Storm**
- Surcharged Hyd. Restriction
 - Surcharged
- <= 20-Year 24-Hour Storm**
- No Surcharge

Notes:

1) There are no engineered SSO facilities within the Outfall Sewershed.

2) Year 2025 Conditions for OUT05 sewershed assumes that OUT05 is disconnected from the 99 inch Outfall sewer, and that OUT05 drains to Low Level without backwater conditions.

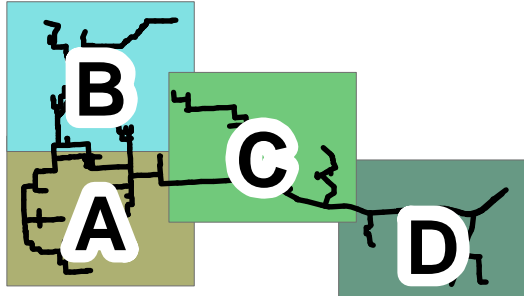


Figure 5-3-2-D